

HEPATITIS C AMONG NONINJECTING DRUG USERS: A REPORT

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ABSTRACT

Objectives: This report documents the prevalence of hepatitis C virus (HCV) infection among self-reported noninjecting drug users recruited from two New York City neighborhoods. *Methods:* Participants were recruited in separate studies from East Harlem and the Lower East Side of Manhattan and were administered structured questionnaires and tested for HCV. *Results:* HCV prevalence rates among those reporting no history of injecting drugs ranged from 5% to 29%, according to age, gender, and study location. *Conclusions:* Our results suggest that more research is needed to elucidate potential non-injecting routes of HCV transmission among drug users.

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Moreover, policies that rely predominantly on injector status as the only drug-related risk factor for HCV screening need to be reassessed in light of these findings.

Key Words: Hepatitis C; Noninjecting drug use; Heroin use; Crack use; Cocaine use.

INTRODUCTION

Hepatitis C virus (HCV) infection has emerged as a major health concern in the United States and other areas of the world. Data from the National Health and Nutrition Examination Survey conducted between 1988 and 1994 indicate that nearly 4 million Americans are currently infected, with about 30,000 new infections occurring annually (McQuillan et al., 1997; Centers for Disease Control and Prevention [CDC], 1998; Alter et al., 1999). Prevalence of HCV is especially high among injecting drug users, hemophiliacs treated with blood products before 1987, blood transfusion recipients before 1992, and chronic hemodialysis patients (CDC, 1998).

The primary route of transmission for HCV occurs through blood-to-blood contact (Alter, 1993). Currently, about 60% of all new cases of acute HCV infection in the United States are attributed to syringe and needle-sharing with an infected individual (CDC, 1998). Other possible routes of transmission that do not involve percutaneous exposure to blood remain poorly understood. For example, while several studies have pointed to a low but significant probability of sexual transmission of HCV (Thomas et al., 1994; Ndimbie et al., 1996; Rooney and Gilson, 1998), others have found no evidence of HCV-RNA in the seminal fluid of HCV-infected men (Semprini et al., 1998; Debono et al., 2000).

In addition to sexual transmission, ethnographic data indicate that HCV may be transmitted through the sharing of noninjection drug equipment, such as straws or pipes (Conry-Cantilena et al., 1996; Alter et al., 1997). However, in a recent policy report on HCV prevention the CDC cautioned that "*Until more data are available, whether persons with a history of noninjecting illegal drug use alone (e.g., intranasal cocaine use) are likely to be infected with HCV remains unknown*" (CDC, 1998:6).

In this brief communication we report on the relatively high prevalence of HCV infection among self-reported noninjecting drug users independently recruited from two neighborhoods in Manhattan. One study was comprised of males and females reporting noninjection heroin use recruited from the Lower East Side/East Village, and the other involved women who report injecting and noninjecting drug use recruited in East Harlem.

METHODS

HIV Risk and Transitions from Noninjecting Heroin Use (Study A)

Study A is an ongoing cohort study of noninjecting heroin users that explores the "risk factors" involved in transitioning to injecting and other drug use patterns. The study also examines the risk factors for, and prevalence and incidence of infection with human immunodeficiency virus (HIV), hepatitis B (HBV), and hepatitis C (HCV). Eligible respondents were at least 18 years of age, and reported using heroin through noninjected routes of administration in the 30 days before the baseline interview. In addition, respondents reported either never injecting drugs (never-injectors), or not injecting in the 6 months before the baseline interview (former injectors).

Respondents were recruited from out-of-treatment settings in and around the East Village/Lower East Side neighborhoods of Manhattan in New York City, using targeted sampling and chain-referral methods (Watters and Biernacki, 1989; Heckathorn, 1997). After providing informed consent, eligible respondents were interviewed individually by trained interviewers in private offices, had blood drawn by a trained phlebotomist, and provided urine samples for drug testing. Respondents were paid \$15 for their participation. Data from Study A were obtained from 524 respondents recruited between March 1996 and July 1998.

Multiple methods were used to validate criteria for entry into the study. Respondents were screened to determine whether they had ever injected drugs and, if so, whether they had injected within 6 months before the baseline interview. They were also screened to determine whether they had used noninjected heroin in the last 30 days.

Screening for injector status occurred in several stages. Recruiters made their initial contact with potential respondents in the field or at the research storefront. Recruiters identified themselves, and informed potential respondents that a study was being conducted on health and drug use. Those who agreed to be screened were asked what drugs they had injected and the last time they had injected drugs. At the storefront, they were also asked to roll up their sleeves so that staff could observe whether there was evidence of recent needle track marks. Those who had injected in the previous 6 months were not eligible, and were referred to other local studies. This helped minimize any incentive for potential respondents to provide false information on their current injection status to get into the study.

In addition, staff were trained to pay attention to information provided in the interview that raised suspicions about injector status (e.g., if respondents reported using a syringe exchange in the last 6 months). One-

hundred fifteen respondents who reported in follow-up interviews or counseling sessions that they had injected in the 6 months before the baseline interview were eliminated from the study.

The screening process for validating heroin use in the past 30 days included questionnaire screening using both structured questions and open-ended questions asking respondents to describe how they felt when using heroin. Respondents were also asked to provide urine, which was tested for opiate and cocaine metabolites using the Roche-Ontrak test. Respondents reporting use of heroin the day of or day before the interview, but with a negative urine test, were removed from the sample.

Women Drug Users, Acquired Immunodeficiency Syndrome (AIDS), and Social Context (Study B)

Study B was undertaken to examine the relationship of contextual factors to HIV, HBV, and HCV risk behaviors among drug-using women from East Harlem. Over 600 women were recruited on the streets of East Harlem between October 1997 and June 1999 by outreach workers using targeted sampling methods (Watters and Biernacki, 1989) and participant referrals. Eligible women had to be at least 18 years of age, heterosexually active at least once in the previous 6 months, and report the use of injected or noninjected heroin, cocaine, or crack in the previous 30 days. All participants reviewed and signed an informed consent. A private, face-to-face, structured interview was administered by trained female interviewers. Women were paid \$25 for their participation and offered counseling and testing for HIV, HBV, and HCV infection.

For the purpose of this report we examined a subsample of 234 women who reported using heroin, crack, or cocaine in the past 30 days, and who reported either never injecting drugs (never-injectors) or not injecting in the 6 months before the interview (former injectors). Past 30-day noninjecting drug use was determined on the basis of both self-reported and biological data. Participants voluntarily provided urine samples, which were tested for cocaine and heroin metabolites using the Roche-Ontrak test. Respondents reporting cocaine or heroin in the past 48 hours but testing negative were excluded. Participants knew they would be tested for drug use, and this may have contributed to the validity of responses.

Injector status was determined on the basis of self-reported data as well as interviewer observations. Numerous items regarding injection drug use were embedded in different sections of the questionnaire (e.g., drug use, drug treatment, needle exchange, primary relationships, social networks, etc.). Respondents providing conflicting information regarding injection,

past or present, were eliminated from the sample. In addition, our interviewers have had extensive experience dealing with injection drug users, and were instructed to look for signs of injection (e.g., needle track marks) during the session. Moreover, because the study accepted both self-reported injectors and noninjectors, there was no incentive for potential participants to misrepresent their injector status to get into the study. Four respondents were excluded because they gave conflicting information regarding their injection history during the interview.

In both Study A and Study B, potential respondents were informed that a study was being conducted on health and drug use, and that any information they divulged is strictly confidential. Assurance of confidentiality was made verbally as well as by displaying a federal Certificate of Confidentiality, which is issued by the US Department of Health and Human Services. This prevents research data from being subpoenaed and used against respondents in a court of law.

In both studies, hepatitis C testing was conducted using the Abbott HCV EIA 2.0 procedure for encoded antigens (recombinant c100-3, HC-31, and HC-34). According to Abbott Laboratories, the specificity of this test is high, with a false-positive rate of only 0.17%. The false-negative rate has been estimated at 27.27% (Abbott Laboratories, 1995). If these rates are accurate, the anti-HCV positive rates reported here may actually be underestimated.

RESULTS

Of 524 respondents in Study A, 29% were female. The median age was 32 years for females and 34 years for males. The composition by race/ethnicity comprised 29% black, 38% Latino (primarily Puerto Rican), 28% white, and 5% other groups. The Study B sample included 234 female respondents, of which 57% were black, 41% were Puerto Rican, and 2% were white. The median age was 39 years.

Anti-HCV prevalence rates are presented separately for participants reporting never-injecting (Table 1) and former-injectors (Table 2). The prevalence rates for those reporting never-injecting are: in Study A, 14% for women and 18% for men, and in Study B, 17%. For those reporting former-injection the rates are: in Study A, 54% for women and 58% for men, and in Study B, 62%. In each table, prevalence rates are reported according to study location, noninjecting drug use, gender, and, for females reporting never-injecting, age group. Several patterns are apparent in the data. With reference to Table 1, the anti-HCV prevalence rates for those reporting never-injecting are greater than zero, with a range of between 5% and

Table 1. Prevalence of Hepatitis C Antibody Among Noninjecting Drug Users Who Report No Previous History of Injection Drug Use

Past 30-day noninjecting drug use Gender Age	Lower East Side (Study A)		East Harlem (Study B)	
	<i>N</i>	HCV positive <i>n</i> (%)	<i>N</i>	HCV positive <i>n</i> (%)
Heroin users				
Males	251	45 (18%)	NA	NA
Females	107	15 (14%)	70	18 (26%)
Under 35 years	72	7 (10%)	18	3 (17%)
35 years or older	35	8 (23%)	52	15 (29%)
Crack or cocaine users (who did not also use heroin)				
Males	NA	NA	NA	NA
Females	NA	NA	101	11 (11%)
Under 35 years			37	2 (5%)
35 years or older			64	9 (14%)

29%. Among those reporting never-injecting, the anti-HCV prevalence of women heroin users from East Harlem (26%) is greater than for women recruited from the Lower East Side (14%). This discrepancy may be attributable at least in part, to differences in age between the two study samples. The results presented in Table 1 suggest that older women (≥ 35 years) have a higher anti-HCV prevalence than do younger women (< 35 years). The higher median age of women in the East Harlem sample compared with the Lower East Side may thus account, in part, for the higher prevalence rates among the former. Results from Study B showed that females reporting never-injecting who used crack or cocaine but not heroin exhibited a lower anti-HCV prevalence compared with the heroin-using group.

Table 2 presents anti-HCV prevalence data for those who were self-reported former-injectors. As expected, the rates were substantially higher for former-injectors than for never-injectors. In contrast to never-injectors, former-injectors exhibited anti-HCV rates that were quite similar across study location, noninjecting drug use categories, and gender (range: 54%–61%). The limited size of the former-injector samples precluded any meaningful comparisons between age groups.

Table 2. Prevalence of Hepatitis C Antibody Among Noninjecting Drug Users Who Report a Previous History of Injection Drug Use

Past 30-day noninjecting drug use Gender	Lower East Side (Study A)		East Harlem (Study B)	
	<i>N</i>	HCV positive <i>n</i> (%)	<i>N</i>	HCV positive <i>n</i> (%)
Heroin users				
Males	120	70 (58%)	NA	NA
Females	46	46 (54%)	44	27 (61%)
Crack or cocaine users (who did not also use heroin)				
Males	NA	NA	NA	NA
Females	NA	NA	19	12 (61%)

DISCUSSION

Very little previous research has focused on HCV infection among noninjecting drug users. The few published studies (Boazhang et al., 1997; Santa Rodriguez et al., 1998; Hershov et al., 1998; Chang et al., 1998) reported anti-HCV prevalence rates for never-injectors consistent with those reported here (i.e., mostly between 10% and 35%). These findings indicate that the prevalence of HCV among users of heroin, crack, and/or cocaine who report that they have never injected is substantially higher than for the general population in the United States and several other countries, whose prevalence has been estimated at around 2% (Alter et al., 1999; Bellentani et al., 1999).

There are two possible explanations for the high prevalence of HCV infection observed among self-reported never-injectors. First, some respondents categorized as never-injectors may have actually injected in the past. Some may have intentionally misrepresented their injecting history, but it is also possible that respondents with very little injection experience, or those who had "skin-popped" or engaged in other percutaneous techniques, may not have considered the experience "injecting." Nonetheless, the screening procedures in the two studies were designed to minimize this underreporting. Second, the considerable prevalence of HCV among never-injectors may reflect noninjecting routes of transmission. More research is needed

to determine the precise nature of the risk factors for HCV transmission associated with noninjecting drug use.

The appearance of HCV among those reporting no history of injecting drug use is of particular concern. A pool of HCV-infected noninjecting drug users may be a residual source for the transmission of HCV to other populations. Moreover, the high prevalence of HCV among those reporting noninjecting drug use has relevance for testing and treatment policies. CDC guidelines for HCV testing are currently ambiguous with regard to noninjecting drug users. Although CDC recommends routine HCV testing for individuals with a history of injection, noninjecting drug users are in a category in which "the need for, or effectiveness of, routine testing has not been determined" (CDC, 1998:25). Given the impact of drug abuse, especially alcohol consumption, on the progression of HCV-related liver disease (Cooksley, 1996; Wiley et al., 1998; Ostapowicz et al., 1998; Nevins et al., 1999), the need for HCV testing, diagnosis, counseling, and medical treatment for a population already stricken by addiction, poverty, and AIDS seems all the more pressing. Studies evaluating the effectiveness of screening and treatment for HCV infection among noninjecting drug users are warranted. Our preliminary findings that HCV prevalence rates for those reporting no history of injection drug use may vary according to population, gender, age, and drugs used underlines the need for additional research focused on the risk factors for HCV transmission among those with no history of injecting drugs.

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RESUMEN

Objetivos: Este informe documenta el predominio de la infección del virus de la hepatitis C (VHC) entre los droga-utilizadores no inyectando reclutados de dos vecindarios de la Ciudad de Nueva York. *Métodos:* Reclutaron a los utilizadores no inyectando de la droga, en estudios separados, de Harlem Oriental y el Lado Oriental más Bajo de Manhattan. Los participantes fueron administrados cuestionarios estructurados y probados para VHC. *Resultados:* El predominio de VHC clasifica entre éstos que

señalan nunca inyectar drogas se extendió de 5% a 29%, según edad, género, y la localización del estudio. *Conclusiones:* Nuestros resultados sugieren que se necesita más investigación para elucidar el potencial de transmisión de VHC por rutas no inyectadas entre usuarios de drogas. Además, necesitamos revalorizar normas que depende mayormente en el estatus del inyector como el factor de riesgo droga-relacionado para la investigación de VHC, en vista de estos hallazgos.

RÉSUMÉ

Objectifs: Cet rapport documente la prédominance de l'infection du virus de l'hépatite C (VHC) parmi des usagers de drogues non-injectables recrutés dans deux quartiers de la ville de New York. *Méthodes:* Des usagers de drogues non-injectables furent recrutés pour 2 projets de recherche différents dans Harlem d l'Est et dans le "Lower East Side" de Manhattan. Un questionnaire structuré fut administré aux sujets qui ont aussi été testés pour l'hépatite C. *Résultats:* Les taux de prévalence de VHC parmi ceux qui n'ont jamais injecté de drogue allaient de 5% à 29%, selon l'âge, le sexe, et le quartier où la recherche était conduite. *Conclusions:* Nos résultats suggèrent que plus de recherche est nécessaire pour élucider les voies de transmissions autres que par injection de HCV parmi les usagers de drogues. Par ailleurs, les règles fondées principalement sur l'injection comme le facteur de risque liés à l'usage des drogues pour le VCH doivent être mises en revue en tenant compte de ces résultats.

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