FOLLOW-UP FOR MEDICAL CARE AMONG DRUG USERS WITH HEPATITIS C

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Prevalence of hepatitis C (HCV) in injection drug users (IDUs) is high and once HCV has been detected, follow-up medical care is essential. Six hundred and one current and former IDUs who tested positive for HCV antibodies received referrals for medical care. Twenty-four percent (147) of participants returned to be interviewed regarding their medical follow-ups. Of these, only 42% (61) had sought additional medical care in the form of further liver or blood tests or liver ultrasound. Four variables predicted seeking medical care: (a) ever being in residential drug treatment, (b) ever trading sex for money, (c) self-reported homelessness, and (d) living in one's own apartment or house. Having income from a job was inversely associated with seeking medical care. Knowledge of HCV infection alone does not mean that IDUs will seek medical care. Additional education concerning medical care and treatment options are needed to address IDU needs.

Keywords: *hepatitis C; injection drug users and medical care; referrals*

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EVALUATION & THE HEALTH PROFESSIONS, Vol. 29 No. 4, December 2006 355-366
10.1177/0163278706296003

BACKGROUND

Prevalence of hepatitis C (HCV) in injection drug users (IDUs) is high, with reports estimating that between 50% to 92% of IDUs are infected with HCV (Alter, 1997; Fisher et al., 1997; Garfein et al., 1998). Among IDUs with more than 5 years of injecting, prevalence is between 80% and 90% (Edlin et al., 2005). HCV is most common in persons aged 30 to 49 years of age, and future projections predict a fourfold increase in the number of people who are at risk of chronic liver disease—that is, those with infection for 20 years or longer (Kim, 2002). Primary prevention of HCV in IDUs has focused on needle exchange programs and use of sterile injection equipment; however, these efforts have met with mixed results (Hagan, Thiede, & Des Jarlais, 2005). HCV is a severe illness, and once HCV is detected, follow-up care is essential. Studies have shown that the majority of IDUs are interested in receiving treatment for HCV (Stein, Maksad, & Clarke, 2001) but do not receive treatment, either because of unwillingness to follow through or because of other barriers, such as provider unwillingness to enroll this population into treatment protocols (Fishbein, Lo, Reinus, Gourevitch, & Klein, 2004; Giordano et al., 2005; Huckans, Blackwell, Harms, Indest, & Hauser, 2005; Kresina, Bruce, Cargill, & Cheever, 2005; Mehta et al., 2005; Stoove, Gifford, & Dore, 2005).

Studies of HCV-infected veterans identified through Veteran's Administration (VA) records indicate that co-occurring disorders, such as depression, alcohol use, and illicit drug abuse, contribute to loss of follow-up and treatment refusals (Butt, Wagener, Shakil, & Ahmad, 2005). Substance abuse and psychiatric conditions are contraindications for treatment for HCV (Fultz et al., 2003), and up to 93% of HCV-infected veterans reported at least one psychiatric disorder (Fireman, Indest, Blackwell, Whitehead, & Hauser, 2005). However, other factors, such as low education and a history of incarceration, also contributed to a lack of appropriate follow-up and treatment in this VA study (Fultz et al., 2003).

Fishbein et al. (2004) found that, in a cohort of drug users referred for HCV evaluation and care under an expedited model of care, only a few (25%) actually received an evaluation. Only being HIV positive was associated with participant acceptance of a referral. Contraindications for referrals and treatment for IDUs are detailed in Edlin et al. (2005) and include a lack of on-site services in agencies

frequented by IDUs (i.e., methadone maintenance sites), distrust of health care providers, and current drug and alcohol use.

The purpose of this study is to report on the effectiveness of providing referrals to medical care for out-of-treatment HCV-infected IDUs.

METHOD

PARTICIPANTS

A total of 817 current and former IDUs were recruited from drug treatment programs, methadone maintenance programs, needle exchange programs, and a community-based agency between October 2002 and December 2004. The purpose of the recruitment was to determine the prevalence of HIV and hepatitis A, B, and C in this population. Specifics of the main prevalence study have been previously reported in Fisher, Reynolds, Jaffe, and Perez (2006). Briefly, all participants had to be at least 18 years of age and have visible signs of injection ("track marks") according to the classification system established by Cagle and colleagues (Cagle, Fisher, Senter, Thurmond, & Kastar 2002) for inclusion in the study. All participants who received testing for hepatitis A, B, and C, and HIV also received posttest counseling to explain their test results. Among participants, 205 tested positive for all three hepatitis infections. Of those individuals testing positive for two infections (n = 134), the distribution was as follows: 11 (8%) tested positive for the combination of hepatitis A and B, 44 (33%) tested positive for hepatitis A and C, and the most frequent combination among those testing positive for two infections was 79 (59%), who tested positive for both hepatitis B and C (Fisher et al., 2006).

Individuals who tested positive for HCV (n = 601), regardless of co-infection, received information on the importance of medical care, including liver function testing; participants were provided with a list of medical care providers offering these tests, including maps and directions on how to get there. These participants were contacted, either through a mailed invitation or in person, to complete a follow-up questionnaire (see Figure 1). Individuals agreeing to complete the follow-up questionnaire were provided with a $10 non-cash incentive for their time. The follow-up window lasted from 1 to 6 months (M = 175 days, SD = 147.9 days) following hepatitis

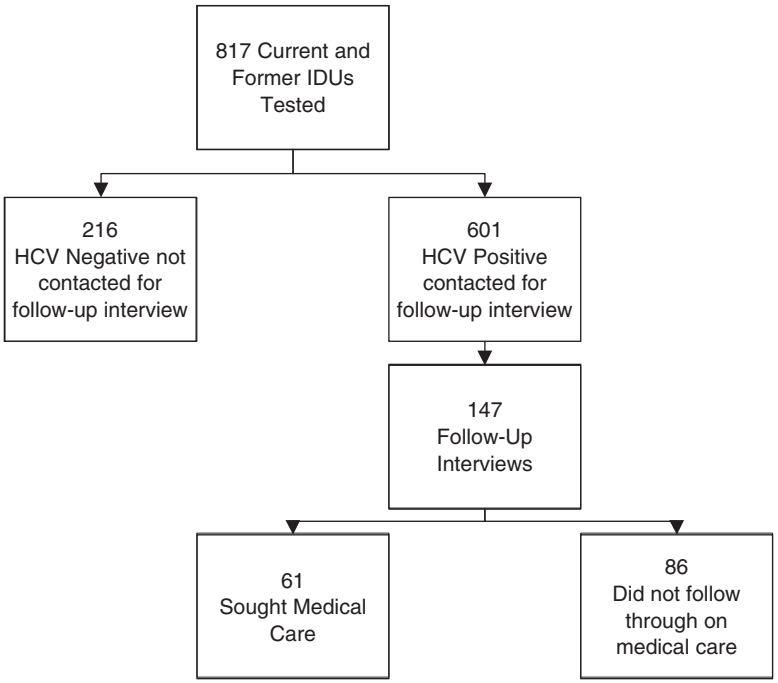

Figure 1: Hepatitis Demonstration Project Participant Flow Chart

test result disclosure. All bivariate analyses and the multivariate logistic regression model were done using SAS version 9.1.3.

QUESTIONNAIRE

At follow-up interview, participants completed a questionnaire that elicited information on the following: whether they had followed up with a medical provider, what type of additional testing (e.g., liver panel) had been provided, and whether the participant had initiated treatment for HCV. The questionnaire also ascertained whether the participant had health insurance and, if so, what type of insurance. Finally, the questionnaire elicited reasons why participants failed to seek medical care.

At baseline interview, participants had completed the Risk Behavior Assessment (Dowling-Guyer et al., 1994; Needle et al., 1995),

which elicits information on drug and sex HIV risks and history of hepatitis and other sexually transmitted infections as well as the Blood-Borne Virus Transmission Assessment Questionnaire (Fry & Lintzeris, 2003), which elicits information on hepatitis risks associated with injection drug use.

RESULTS

Of 817 current and former drug injectors tested for HCV, 601 (71%) were positive for HCV. Results of comorbidities with hepatitis A, hepatitis B, and HIV have been reported elsewhere (Fisher et al., 2006), but co-infection with multiple types of hepatitis was high and prevalence of HIV was low.

Participants were 70% male; 52% were White, 23% Latino/Hispanic, 21% African American, 4% other, and 48% reported that they considered themselves to be homeless. The majority (40%) were single, and 42% reported less than a high school education. The mean age of participants was 46.18 years (SD = 7.67). Table 1 shows demographic characteristics for the total sample tested, including those who did not return for the follow-up interview and those who did. There were no differences between the two groups with respect to gender, race/ethnicity, educational attainment, marital status, or self-reported homelessness. Twenty-four percent (147) consented to complete the follow-up interview related to medical care (see Figure 1).

The most common type of insurance reported by participants was Medicaid (known as MediCal in California) and was reported by 37% (54), followed by California General Relief (23%, 34). Sixteen percent (24) reported "other" as their insurance type, and when asked to specify what the "other" was, answers ranged from veterans' benefits to private insurance, with no one specified type of insurance being mentioned more frequently than any other.

Forty-two percent (61) reported that they had sought additional medical follow-up and care from one of the medical referrals provided by the test counselors; the remainder (58%, 86) reported that they had not sought additional medical care on learning of their HCV status. The primary reason for not seeking additional medical care was that they "did not want more bad news."

The most common type of additional medical care participants reported receiving was a liver function panel (69%, 42). Participants

TABLE 1
Demographics of HCV Positive Participants ($N = 601$)

	Did Not Return for for Follow-Up Interview (n = *454*)		*Returned for Follow-Up Interview* (n = *147*)		
Characteristic	n	%	n	%	p
Gender					
Male	300	66	108	73	
Female	154	34	39	27	*ns*
Race/ethnicity					
Black, not Hispanic	91	20	29	21	
White, not Hispanic	222	49	76	52	
Hispanic	118	26	34	23	
Native American	2	1	3	2	
Asian/PI	8	1	1	1	
Other	13	3	1	1	*ns*
Homeless					
Yes	220	56	64	48	
No	172	44	70	52	*ns*
Hepatitis A test result					
Positive	231	60	76	56	
Negative	157	40	56	44	*ns*
Hepatitis B test result					
Positive	250	64	99	74	
Negative	138	36	33	26	$p = .01$
HIV test result					
Positive	9	2	6	4	
Negative	372	98	141	96	*ns*

NOTE: PI = Pacific Islander; *ns* = not significant.

also reported having received ultrasound (7%, 4), liver biopsy (7%, 4), viral load testing (2%, 1), ALT testing (2%, 1), and blood or urine tests of type unknown (8%, 5). There was no difference in time between test result disclosure and follow-up interview between those who had sought additional medical care (M = 169.15 days, SD = 135.79 days) and those who had not (M = 178.64 day, SD = 156.79 days, t (144) = 0.38, *ns*).

Bivariate analysis revealed several variables associated with following through on medical follow-up care. Individuals who also tested positive for HIV were significantly more likely to report that they had sought additional medical care than those who were not HIV positive, $\chi^2(1) = 8.35$, $p = .004$. Participants who reported ever having given sex to get money were also more likely to follow up

TABLE 2
Factors Associated With Follow-Up Medical Care

Variable	*Odds Ratio*	*95% Confidence Interval*
Having a paid job	0.17**	0.04, 0.76
Ever in residential drug treatment	2.63*	1.01, 6.80
Ever trading sex for money	3.52*	1.41, 8.80
Self-reported homeless	3.85**	1.46, 10.14
Living in own house/apartment	6.10*	1.78, 20.95

*$p < .05$. **$p < .01$.

with a medical care provider, $\chi^2(1) = 7.8$, $p = .005$. Having had a health care provider tell them that they had hepatitis B was significantly associated with following up on medical care, $\chi^2(1) = 3.59$, $p = .05$. Also, participants who reported following up had been told significantly more times by a health care provider that they had *Chlamydia* ($M = .33$, $SD = 1.03$) than those who did not follow up on medical care for HCV infection ($M = .10$, $SD = .33$, $t = 2.21$, $p = .03$).

The multiple logistic regression model predicting following through on medical care included five variables (see Table 2). Having a paid job was significantly associated with not seeking follow-up medical care, whereas ever having been in residential drug treatment, ever trading sex for money, self-reported homelessness, and living in one's own house or apartment were significantly associated with having obtained follow-up medical care. Factors not associated with seeking follow-up medical care included gender, age, race/ethnicity, insurance status, recent drug use, and co-infection with hepatitis A and/or hepatitis B.

DISCUSSION

This article reports on follow-up interviews with current and former IDUs who tested positive for HCV and who obtained referrals to medical care when they received their test results.

One factor that was protective against following through for medical help in the multivariate model was having income from a job. Although this may seem counterintuitive, the majority of IDUs who sought care did so at community clinics or county hospitals. These types of medical facilities generally have long waiting times,

especially when services are offered on a walk-in basis. Employed individuals may not be able to wait a long time to receive services because of obligations to employers.

The finding that ever having been in residential drug treatment predicted seeking additional medical care is consistent with recent efforts by drug treatment programs to offer on-site testing for HIV, hepatitis, and sexually transmitted disease. Such treatment programs are also able to assist those in treatment with obtaining social welfare and medical benefits as well as support groups for those who are HCV positive. Although the efforts of drug treatment providers to educate both their staff and clients about HCV are in their infancy, these programs are increasingly important resources for HCV-positive clients (Strauss, Falkin, Vassilev, Des Jarlais, & Astone, 2002; Strauss, Vassilev, & Des Jarlais, 2003).

Ever having traded sex for money was also predictive of seeking additional medical care. This could be because those who have a history of trading sex also have a history of sexually transmitted diseases for which they may have sought medical care in the past. Such individuals would not have to learn a new set of skills to navigate the medical care system, which is in place to assist those with hepatitis infection. This is supported by the fact that ever having been told that they had hepatitis B and the number of times they had been told they had *Chlamydia* were both bivariately associated with following up with a medical provider for HCV infection.

Self-reported homelessness was also predictive of seeking additional medical care. Just as those who have a history of trading sex for money are familiar with seeking services, so homeless individuals may already have developed the necessary skill set to seek medical care for their HCV infection. Pollio and colleagues' work on the service usage patterns of homeless individuals supports this notion that health services usage among the homeless follows a different pattern than use of drop-in centers and counseling services (Pollio, Sptznagel, North, Thompson, & Foster, 2000).

Finally, living in one's own apartment or house was also predictive of following up with additional medical care. Given the chaotic lives of IDUs, those who have stable living situations may be in a better position to take better care of themselves. A stable living situation may be a proxy for those current and former IDUs who have their drug use in check, allowing them to address neglected health care needs.

Self-reported homelessness and living in one's own apartment or house represent two extremes on the continuum of housing. That both are associated with following up for medical care may appear contradictory. However, other reported housing within this sample included living in someone else's house or apartment; living in a hotel, boarding home, or other single room occupancy (SRO) arrangement; living in a halfway house; or living in some other type of place. These represent tenuous housing arrangements that can add to the instability of IDUs' lives. It is those IDUs living at the extremes who appear to be more likely to follow up for medical care.

The most frequently reported reason for not following up for medical care was that participants "did not want more bad news," indicating that receipt of the positive test result for HCV is psychologically difficult, if not devastating. This response may be an indication of depression, which is associated with HCV infection (Johnson, Fisher, Fenaughty, & Theno, 1998). However, this study did not assess for depression in participants. Finally, all referrals for medical care were located away from the CBRS offices and the other off-site locations where testing took place. Previous research on IDUs and their ability to access services for hepatitis A and B vaccination has shown that rates of response may be dependent on having those services on site or adjacent to the main recruitment site where initial entry into studies takes place (Des Jarlais et al., 2001; Trubatch, Fisher, Cagle, & Fenaughty, 2000).

One variable was significantly different between those HCV-positive participants who returned for the follow-up interview and those who did not. One variable was the HBV test result. Those who returned for the follow-up interview were more likely to be co-infected with HBV. High hepatitis co-infection rates have previously been reported in our sample (Fisher et al., 2006). It is an artifact of our sampling, as HBV infection has been reported to be significantly associated with HCV infection in this sample (Fisher et al., 2006). The majority of participants were co-infected with both HBV and HCV. It is possible that this knowledge may have motivated them to return for the follow-up interview, as this would have provided them with the opportunity for additional counseling. Knowledge of co-infection did not mean participants actually followed through with medical care, however.

One important limitation of the current study is the low number of participants with whom we were able to follow up. However, this is not

inconsistent with other studies that found that, although IDUs expressed interest in receiving treatment for HCV infection, very few followed through with treatment (Fishbein et al., 2004; Stein et al., 2001). Our rates are not significantly lower than those reported by other investigators. In the VA studies, standardized evaluation and treatment protocols are in place. However, rates of evaluation, follow-up, and treatment were low (Butt et al., 2005; Fultz et al., 2003). Similarly, in a study of IDUs on methadone maintenance with expedited referrals and care, only a few participants received evaluation and treatment (Fishbein et al., 2004). The combination of current or former injection drug use, poly drug use either with or without concurrent alcohol use, psychiatric co-morbidities, low education levels, a history of incarceration, low levels of use of primary care combined with distrust of providers (or provider distrust of and reluctance to serve IDU populations), and the complexity of evaluating individuals for HCV treatment create barriers that are difficult to surmount even under optimal conditions of provider support for, and encouragement of, treatment in an IDU population (Edlin et al., 2005; Mehta et al., 2005).

CONCLUSION

Care for HCV infection is one way for current and former drug users to establish relationships with primary care providers. It is important to note that in Los Angeles County, the HCV/HIV co-infection rate is low. Individuals with HIV infection have access to networks of medical care providers as well as case managers and social workers to assist them with navigating the social service and medical care systems. Even with these resources, HIV-infected individuals often fail to enroll in available medical treatment because of drug use (Giordano et al., 2005). Individuals who are HCV mono infected, or who have co-infection with multiple types of hepatitis but no HIV infection, have more limited options. The low rate of return, both for the follow-up interviews and with following up with medical care for HCV infection in this study, might be a reflection of structural limitations with respect to services available to IDUs who are not also HIV infected. However, the finding that IDUs did not follow up on medical care because they "did not want more bad news" indicates that there is much work to be done in educating IDUs that HCV infection can be treated. Given current advances in the treatment of

HCV and the high prevalence of HCV in current and former IDUs, understanding factors associated with enrolling this population into treatment and retaining them is critical for improving health outcomes.

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