

Knowledge and Attitudes about Treatment for Hepatitis C Virus Infection and Barriers to Treatment among Current Injection Drug Users in Australia

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Despite recent improvements in outcomes of treatment for infection with hepatitis C virus (HCV), very few current injection drug users (IDUs) have access to treatment programs. We examined the natural history of and treatment knowledge about HCV infection and barriers and willingness to seek treatment for HCV infection. A convenience sample of current IDUs ($n = 100$) with self-reported HCV-positive status drawn from a primary health facility and methadone clinic in inner Sydney completed an interviewer-administered questionnaire. Participants had a reasonable knowledge of the natural history of HCV infection but poorer knowledge of treatment for HCV infection. Most believed that being a current IDU was an exclusion criterion for treatment. Despite this, 70%–80% of IDUs reported that they would consider treatment under current scenarios in Australia: requirement for liver biopsy, subcutaneous injections, common adverse effects, and 40% efficacy. Study participants at the methadone clinic had higher levels of consideration of treatment. These findings support the development of specific education programs regarding treatment for HCV infection for current IDUs.

Major advances have been made in the treatment of chronic hepatitis C virus (HCV) infection in recent years. The sustained clearance of HCV infection is >50% in people treated with combination therapy with pegylated IFN and ribavirin [1, 2], and accompanying improvements in both liver histology and quality of life [3, 4] have clearly shown the curative potential of current treatments. These advances were demonstrated through large randomized clinical trials that excluded current injection drug users (IDUs). However, smaller nonrandomized trials of treatment for chronic HCV infection among current IDUs and people receiving treatment for drug dependency have produced encouraging treatment outcomes [5–7].

In Australia, current and prior IDUs constitute 75%

of the 210,000 people estimated to have been infected with HCV [8]. The prevalence of HCV infection among populations of IDUs is 50%–60% [8], and numbers of regular and occasional IDUs have more than doubled over the past decade to reach 135,000 and 250,000, respectively [9]. Current IDUs have been able to gain access to government-funded treatment for HCV infection in Australia since May 2001, but treatment uptake has remained low [10].

Limited treatment of HCV infection among current IDUs may relate to general barriers to treatment access, low prioritization and IDU-specific barriers to treatment access, and active discrimination by clinicians. Because few studies have explored access to treatment for HCV infection among current IDU populations, we examined knowledge and attitudes about treatment for HCV infection and barriers to such treatment among a group of Australian current IDUs. The aims of the present study were to examine knowledge of the natural history of and treatment for HCV infection; gain an understanding of attitudes and perceived barriers to

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treatment for HCV infection; and quantify the proportion of subjects who would consider treatment under different scenarios.

METHODS

Between May and July 2003, study participants ($n = 100$) were recruited via convenience and snowballing (i.e., word of mouth) sampling from 2 sites in inner Sydney: a primary health care facility, which provided health care to “at-risk youth,” IDUs, and sex workers, and a methadone clinic. These 2 sites were chosen because of their known large populations of current IDUs with HCV infection. The study was advertised through fliers posted at each site, and interested clients contacted the research assistant (A.D.) directly or made study appointments with clerical staff. Participants were offered AUS\$20 as reimbursement for their time and costs. The study was approved by the South-Eastern Sydney Area Health Service and the University of New South Wales research ethics committees.

Inclusion criteria were age ≥ 18 years, self-reported HCV-positive status, and injection of illicit drugs within 6 months of enrollment. Current IDUs who had previously received treatment for HCV infection with subsequent clearance of virus and those currently receiving treatment were ineligible.

Initially, focus group testing of a pilot questionnaire was conducted with 9 current IDUs. This testing indicated that an interviewer-administered questionnaire would be preferable to a self-administered questionnaire because of the complexity of the questionnaire and expected literacy levels of some participants.

One interviewer (A.D.) conducted all interviews with participants. The questionnaire included sections covering socio-demographics; drug use history; contact with health-care professionals; knowledge of the natural history of HCV infection; knowledge of treatment for HCV infection, including specific inclusion and exclusion criteria; attitudes toward and degree of consideration of treatment; and barriers to treatment access. Assessment of knowledge regarding the natural history of HCV infection included estimates of the natural clearance of HCV infection and the risk of developing HCV-related advanced liver disease (i.e., cirrhosis and liver cancer). Consideration of treatment was assessed by means of a 4-point scale (strongly consider, consider, probably not consider, and definitely not consider). The following scenarios were used to examine treatment consideration: requirement of liver biopsy, need for sc injections thrice weekly, and presence of common treatment adverse effects. In addition, participants were asked to indicate their treatment consideration under the following scenarios of treatment success: 20% efficacy, 40% efficacy, and 70% efficacy.

Factors associated with consideration of treatment for HCV infection at the 40% efficacy level were examined. These included demographic factors (i.e., age, sex, type of residence, employment, income, education level, and sexual identity), behavioral factors (i.e., age at first injecting, frequency of injecting,

major drug injected, and alcohol use), and drug dependency treatment-related factors. Knowledge about the natural history of and treatment for HCV infection was also examined as a potential predictor, with knowledge status dichotomized (poor vs. good knowledge) around a median combined knowledge score. Univariate and multivariate predictors of consideration of treatment were examined by logistic regression with a significance level of $P < .05$. Factors in univariate analysis with $P < .1$ were included in the multivariate model. Data were managed with the statistical software package SPSS (version 11.5; SPSS), for descriptive and regression analysis.

RESULTS

Data were obtained from 100 participants who completed interviewer-administered surveys (table 1). Forty-three participants were recruited through the primary health-care facility,

Table 1. Baseline demographic characteristics of Australian injection drug users (IDUs) studied for knowledge about and attitudes toward treatment for hepatitis C virus infection ($n = 100$).

Characteristic	No. of IDUs
Male	59
Heterosexual	77
Age, years	
18–30	24
31–40	45
≥ 41	31
Aboriginal	14
Australian born	78
Inner city resident	67
Department of Social Security housing	65
Main source of income	
Disability support pension	60
Unemployment benefits	15
Sex work	9
Drug dealing	8
Education greater than year 10 (age 15–16 years)	33
Age commenced injection drug use, years	
10–14	26
15–19	45
20–40	29
Drug of choice	
Heroin	55
Amphetamines	22
Cocaine	15
Other	8
Frequency of injecting, times per month	
< 3	39
4–30	39
> 30	22
Undergoing treatment for drug dependency	88

and 57 were recruited from the methadone clinic. Fifty-nine percent were male, and 77% were heterosexual. Almost half (45%) were 31–40 years old. Fourteen percent identified as Aboriginal, and most participants were born in Australia or New Zealand (88%). Two-thirds (67%) of participants lived in inner Sydney, and most participants were socioeconomically disadvantaged, with 65% living in government-subsidized housing and 75% receiving social security benefits. Seventy-seven percent of participants had not received a formal school education past year 10 (15–16 years of age). The vast majority of participants (88%) were in treatment for drug dependency, and most of these (79%) were taking methadone. Just more than half (55%) indicated that their drug of choice was heroin, and almost one-quarter (22%) stated that they had injected at least daily over the last 6 months.

Knowledge of natural history of and treatment for HCV infection. Most participants (76%) were correct in believing that HCV infection does not always make you sick, although other knowledge questions elicited correct answers from $\leq 42\%$ of participants (table 2). In particular, knowledge of the risk of developing advanced liver disease, including liver failure and liver cancer, was poor, with levels of risk being generally overstated. Almost all participants (85%) had heard of treatment for HCV infection, but knowledge relating to treatment was poor (table 3). Only 42% of participants believed that treatment for HCV infection could be curative. A majority of participants understood that the HCV genotype influenced treatment response (70%), but only 6% chose HCV genotype 2 or 3 as responding better to treatment than genotype 1 (the majority were “unsure”). A small minority (2%–5%) correctly selected the general duration of treatment for each of the 3 major Australian HCV genotypes (1–3). Knowledge of the inclusion and exclusion criteria for treatment for HCV infection was reasonable (table 3); however, only half (53%) of participants were aware that current injecting drug use was not an exclusion criterion for treatment. A minority were aware that liver failure

(13%) and pregnancy (25%) were exclusion criteria for treatment for HCV infection.

Attitudes and barriers to treatment for HCV infection. Seventy-three percent of participants reported seeing a health-care professional for monitoring of hepatitis C disease, and more than half of these (40/73 [55%]) reported that this was their local medical officer. Three-quarters (74%) had discussed the long-term effects of hepatitis C disease with a health-care professional, and almost half of these (33/74 [45%]) had discussed this with their local medical officer. Fewer than half of participants (43%) had discussed treatment for HCV infection with a health-care professional, and their local medical officer was again the person identified most often as having discussed treatment (22/43 [51%]).

Twenty-three participants had unsuccessfully attempted to gain access to treatment for HCV infection. Being informed that their liver disease was not advanced enough was the most common reported reason for not being able to obtain treatment ($n = 10$). Other reported reasons were being a current IDU ($n = 5$), long waiting lists for treatment ($n = 3$), and concerns on the part of their medical officer regarding their adherence to treatment ($n = 2$) or heavy alcohol intake ($n = 2$).

Thirty participants had been offered treatment for HCV infection by a medical officer but declined the offer. This included being offered preliminary assessment for treatment, such as a liver biopsy. The main reasons reported for declining the treatment offer were concern about adverse effects of treatment ($n = 18$), not feeling sick enough to commence treatment ($n = 17$), other health priorities at that time ($n = 15$), not wanting to have a liver biopsy ($n = 13$), and concern about feeling lethargic while undergoing treatment ($n = 12$). Most of these 30 participants provided >1 reason.

Consideration of treatment for HCV infection. Under the scenarios provided, participants generally stated that they would consider treatment for HCV infection (strongly consider and consider combined) if a baseline liver biopsy was required

Table 2. Knowledge of the natural history of hepatitis C virus (HCV) infection among a sample of injection drug users (IDUs) in Sydney, Australia.

Question	Correct answer ^a	Percentage of IDUs who gave the correct answer
Can you cure HCV infection?	Yes	42
Does HCV always make you sick?	No	76
Of 100 people, how many will clear HCV infection?	11%–20% or 21%–40%	34
Of 100 people, how many will develop long-term liver damage?	21%–40% or 41%–60%	39
Of 100 people, how many will develop liver cirrhosis?	<10% or 11%–20%	19
Of 100 people, how many will develop liver failure?	<10%	27
Of 100 people, how many will develop liver cancer?	<10%	30

^a Choices for percentage developing different outcomes were <10%, 11%–20%, 21%–40%, 41%–60%, 61%–80%, and >80%.

Table 3. Knowledge of treatment for hepatitis C virus (HCV) infection among a sample of injection drug users (IDUs) in Sydney, Australia.

Question	Correct answer	Percentage of IDUs who gave the correct answer
What is the duration of treatment?		
HCV genotype 1	12 months	5
HCV genotype 2	6 months	5
HCV genotype 3	6 months	2
Do these factors influence treatment response?		
Presence of cirrhosis	Yes	81
Presence of liver failure	Yes	77
HCV genotype	Yes	70
Age	Yes	31
Sex	No	62
Coinfection with HIV or HBV	Yes	66
Early response to treatment	Yes	52
Which genotype responds best to treatment?	HCV genotype 2 or 3	6
Are these factors exclusion criteria for treatment? ^a		
Current injection drug use	No	53
Undergoing methadone maintenance treatment	No	78
Presence of cirrhosis	No	65
Presence of liver failure	Yes	13
Heavy alcohol intake	Yes	62
Absence of symptoms of hepatitis C disease	No	55
Absence of liver fibrosis (scarring)	Yes	20
Normal liver function test results	Yes	31
History of depression	No	77
Coinfection with HIV	No	71
Pregnancy	Yes	25

NOTE. HBV, hepatitis B virus.

^a Correct answers are based on criteria for Australian government-funded treatment for HCV infection.

(78%), if treatment required thrice-weekly sc injections (86%), and if treatment was associated with common adverse effects (82%). The willingness to consider treatment increased further to 89% if medications could be given to help ameliorate treatment adverse effects. Willingness to consider treatment increased with efficacy of treatment scenarios, from 36% for 20% efficacy to 93% for 70% efficacy (figure 1).

Initial trials of combination therapy with IFN and ribavirin demonstrated a 40% treatment efficacy (based on sustained virological response); therefore, demographic factors and knowledge were examined as potential predictors of treatment consideration on the basis of the 40% efficacy scenario (table 4). In univariate analysis, participants recruited from the methadone clinic were more likely to consider treatment (OR, 3.38; 95% CI, 1.36–8.43), and participants who reported that treatment for HCV infection was currently not important to them were less likely to consider treatment (OR, 0.41; 95% CI, 0.17–1.01). In multivariate analysis, both of these factors were significantly associated with treatment consideration. There was a trend toward increased consideration of treatment for HCV

infection with older age, although this was not significant in multivariate analysis. Other demographic and behavioral factors and knowledge regarding HCV infection had no significant relationship with treatment consideration.

DISCUSSION

Most current IDUs included in our survey would consider treatment for HCV infection under existing treatment scenarios in Australia: requirement for baseline liver biopsy, common adverse effects, sc injections, and an efficacy level of ~40%. Despite high levels of reported treatment consideration, relatively few current IDUs in Australia have received treatment for HCV infection. Participants at the methadone clinic were more likely to consider treatment for HCV infection, and treatment consideration increased in line with improving efficacy scenarios.

There are several limitations to our study methodology. First, the study population was from 2 inner Sydney sites; therefore, the results may not be representative of other populations of current IDUs in Australia. However, the demographic profile of

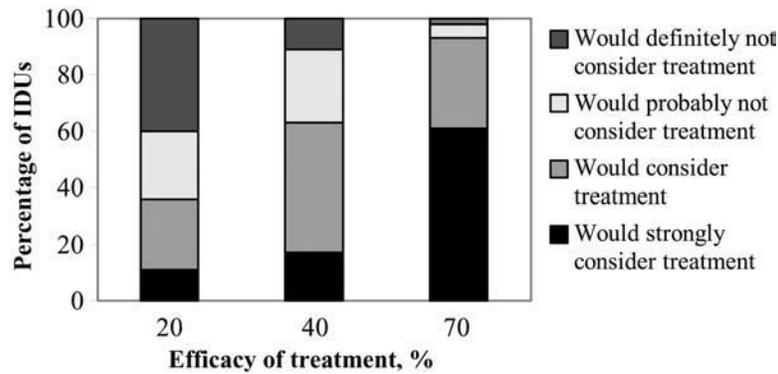


Figure 1. Attitudes toward treatment for hepatitis C virus infection among injection drug users (IDUs) at various treatment efficacy levels

the study population is similar to much larger current IDU survey populations [10, 11]. Second, HCV-positive status was self-reported. Studies of self-reported HCV status have been variable, but false-negative reporting is more common than false-positive reporting [12]. To enhance confidentiality and trust between the research staff and study participants, verification of self-reported HCV status was not done. In addition, the study was based in clinics that provide free access to testing and counseling for HCV infection and have high levels of testing for bloodborne virus. Third, a convenience sample was used, which, although inherently more feasible, can be associated with significant biases. Fourth, the survey was administered face-to-face, which may lead to interviewer bias and socially desirable answers. Fifth, there was no assessment of other social and health priorities. For many current IDUs, treatment for HCV infection may be a relatively low priority, compared with issues of income, housing, drug access, and other non-HCV-related health issues. Finally, there was no comparison group of past IDUs or people who are not IDUs. Although knowledge regarding treatment for HCV infection was poor, this may also be the case for other populations with HCV infection.

Overall, participants had reasonable knowledge of the natural history of HCV infection; however, they tended to overestimate the risk of developing complications of advanced liver disease. Stein et al. [13] found even greater overestimation among a Canadian population of current IDUs, with 81% of participants estimating that the risk of developing cirrhosis was $\geq 50\%$ within the next 10 years. The natural history of HCV infection has been more clearly defined in recent years [14–17], and these findings have been incorporated into a wide range of education materials for people with HCV infection in Australia. However, further education programs, both community-based and for health care professionals, are required to improve the understanding of HCV-related prognosis.

In contrast to reasonable knowledge of the natural history of HCV infection, there were large gaps in knowledge of treatment for HCV infection. A minority of participants were aware that

treatment for HCV infection could be curative. The impact of HCV genotypes on duration and outcomes of treatment for HCV infection was poorly understood. Furthermore, only 1 in 4 participants reported having had an HCV genotype test, and only 5% knew their HCV genotype. Because HCV genotype is the strongest predictor of efficacy of treatment for HCV infection [1, 2, 18], knowledge of HCV genotype could be a crucial factor for the consideration of treatment for many current IDUs. A 6-month course of combination therapy with IFN and ribavirin for a current IDU infected with HCV genotype 2 or 3, given potential efficacy of $>50\%$, may be considerably more feasible than a 12-month course and efficacy of $<50\%$ for a similar IDU infected with HCV genotype 1. In Australia, HCV genotyping is currently available only through specialist clinics; therefore, expansion of access to primary care clinics is required.

Most participants would consider treatment for HCV infection under existing treatment scenarios in Australia. A baseline liver biopsy is required for access to Australian government-funded treatment for HCV infection. Almost 80% of participants reported that they would consider or strongly consider treatment for HCV infection despite this requirement. However, of the 30 participants who reported being offered treatment or assessment for treatment, 13 stated that they did not proceed because of the requirement for a liver biopsy. Thus, despite the reported treatment consideration levels, liver biopsy may still be a significant barrier to access for many current IDUs. Consideration of treatment for HCV infection increased with scenarios of increasing treatment efficacy. Under the most realistic current efficacy level (40%), 63% would consider or strongly consider treatment for HCV infection. Stein et al. [13] found that 52% of their current IDU participants were willing to use a medication that required injection, only worked in 20% of cases, caused nausea, and required a liver biopsy.

Greater consideration of treatment for HCV infection was evident among participants from the methadone clinic. A majority of participants from the primary care facility were also receiving treatment for drug dependency; however, this clinic

Table 4. Predictors of consideration for treatment for hepatitis C virus (HCV) infection among a sample of injection drug users in Sydney, Australia ($n = 100$), based on 40% treatment efficacy.

Factor	No. of IDUs who would not consider	No. of IDUs who would consider	All IDUs	Univariate analysis		Multivariate analysis	
				OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>
Sex							
Male	15	48	63	...	...	...	...
Female	13	24	37	0.57 (0.23–1.40)	.23	...	...
Age, years							
18–30	10	14	24	...	...	...	...
31–40	12	33	45	1.96 (0.69–5.59)	.21	...	...
≥41	6	25	31	2.98 (0.89–9.99)	.08	...	...
Trend				1.74 (0.94–3.19)	.08	1.49 (0.79–2.81)	.22
Aboriginal							
Yes	2	12	14	...	...	...	...
No	26	60	86	0.39 (0.10–1.84)	.23	...	...
Sexual identity							
Bisexual/homosexual/other	6	17	23	...	...	...	...
Heterosexual	22	55	77	0.88 (0.30–2.53)	.81	...	...
Place of residence							
Own or rent house/flat	17	52	69	...	...	...	...
Street/squat/boarding house	11	20	31	0.59 (0.24–1.49)	.23	...	...
Employment							
Employed	6	17	23	...	...	...	...
Unemployed	22	55	77	0.88 (0.31–2.53)	.81	...	...
Source of income							
FT/PT/social security	20	59	79	...	...	...	...
Sex work/crime/dealing	8	13	21	0.55 (0.20–1.52)	.25	...	...
Education							
Less than year 10 ^a	13	30	43	...	...	...	...
Greater than year 10	15	42	57	1.21 (0.50–2.92)	.67	...	...
Frequency of injecting							
Not in the last month	7	12	19	...	...	...	...
1–10 times last month	8	34	42	2.48 (0.74–8.31)	.14	...	...
≥11 times last month	13	26	39	1.17 (0.37–3.67)	.79	...	...
Trend				0.96 (0.53–1.75)	.90		
Age commenced injecting, years							
10–14	8	18	26	...	...	...	...
15–19	15	30	45	0.89 (0.32–2.51)	.82	...	...
20–40	5	24	29	2.13 (0.60–7.62)	.24	...	...
Trend				1.42 (0.78–2.58)	.25		
Drug of choice							
Heroin	16	39	55	...	...	...	...
Amphetamines	6	16	22	1.09 (0.36–3.30)	.87	...	...
Cocaine	4	11	15	1.13 (0.31–4.07)	.85	...	...
Other	2	6	8	1.23 (0.22–6.76)	.81	...	...
Alcohol intake							
Yes	16	35	51	...	...	...	...
No	12	37	49	1.41 (0.56–3.40)	.44	...	...
Treatment for drug dependency							
Yes	22	66	88	...	...	...	...
No	6	6	12	0.33 (0.10–1.14)	.08	0.52 (0.13–2.11)	.36

(continued)

Table 4. (Continued.)

Factor	No. of IDUs who would not consider	No. of IDUs who would consider	All IDUs	Univariate analysis		Multivariate analysis	
				OR (95% CI)	P	OR (95% CI)	P
Duration of treatment for drug dependency, months							
1–6	5	11	16	...	...	...	...
7–24	9	20	29	1.01 (0.27–3.37)	.10	...	...
25–240	19	24	43	0.57 (0.17–1.94)	.37	...	...
Trend				0.72 (0.40–1.29)	.26		
Recruitment site							
Primary care clinic	18	25	43	...	...	...	...
Methadone clinic	10	47	57	3.38 (1.36–8.43)	.009	3.65 (1.42–9.35)	.007
Knowledge about HCV							
Poor	20	28	48	...	...	...	...
Good	17	35	52	1.47 (0.65–3.32)	.35	...	...
Is treatment important to you?							
Yes	11	44	55	...	...	...	...
No	17	28	45	0.41 (0.17–1.01)	.05	0.37 (0.15–0.96)	.04

NOTE. FT, full-time employment; PT, part-time employment.

^a 15–16 years of age.

provides an access program for clients whose lives are more “chaotic” and who are unable to gain access to mainstream services. Participants in more stable drug dependency treatment may consider treatment for HCV infection more readily, because they are already engaged daily in the health-care system and have regular contact with health-care professionals. Clinics for treatment of drug dependency, particularly those that already provide counseling about and testing for HCV infection, should be assessed as potential clinics to provide treatment for HCV infection. Greater collaboration between clinicians and services providing treatment for drugs and alcohol and treatment for HCV infection would undoubtedly improve access to treatment for HCV infection for current IDUs.

Older participants tended to more strongly consider treatment for HCV infection. This phenomenon may reflect changing social and health priorities with age or development of more symptomatic liver disease. Most IDUs are infected at a young age, and chronic HCV infection is generally a slowly progressive disease; therefore, assessment for treatment for HCV infection should be more strongly encouraged for older current IDUs. A recent Australian study showed that risk of developing moderate-to-severe hepatic fibrosis (compared with no to minimal hepatic fibrosis) increased considerably above age 35 years [19]. Thus, current IDUs >35 years old could be particularly targeted for assessment for treatment for HCV infection.

Real or perceived barriers to treatment for HCV infection were present for many participants. Only 30% of participants had ever been offered treatment for HCV infection, and 23% had unsuccessfully attempted to obtain treatment. Furthermore, fewer

than half had ever discussed treatment for HCV infection with a health care professional. There are several potential explanations for these levels of treatment access. Many physicians may believe that current IDUs are unable to gain access to government-funded treatment for HCV infection, the situation in Australia before May 2001. Other physicians who are aware of this change may perceive current IDUs to be inappropriate for treatment for HCV infection because of concerns with treatment adherence, poor treatment outcomes, and HCV reinfection. HCV specialists have raised such concerns [20], despite the growing evidence of favorable treatment outcomes for current IDUs and those undergoing treatment for drug dependency [5–7]. Finally, despite the high levels of reported treatment consideration in this study, other social and health-related issues may take priority over HCV infection for most current IDUs.

Our study has demonstrated that many current IDUs would consider treatment for HCV infection under current treatment scenarios in Australia. Understanding of the natural history of and treatments for HCV infection should be improved through specifically targeted education initiatives. Barriers to access to treatment for HCV infection should be further examined, and models for effective delivery of treatment for HCV infection to current IDUs should be explored.

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