Feasibility and Outcome of HCV Treatment in a Canadian Federal Prison Population

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We assessed feasibility and outcome of hepatitis C virus (HCV) treatment in male correctional inmates in British Columbia, Canada. We reviewed the medical charts of 114 treated inmates; 80 had complete data for treatment outcome. Approximately 4 of 5 inmates completed treatment (78.8%); 66.3% achieved sustained virological response. Those who completed treatment, those with injection drug use as a risk factor, and those with genotypes 2 and 3 were significantly more likely to achieve sustained virological response. HCV treatment in correctional inmates is feasible and effective. (*Am J Public Health.* 2005;95:1737–1739. doi:10.2105/AJPH.2004.056150)

The prevalence of hepatitis C virus (HCV) infection in Canadian (federal and provincial) correctional populations is extremely high and has been reported to range from 23% to 87%.[1–3] These rates are similar to those found in correctional populations in other Western countries.[4,5] HCV in these countries now is transmitted primarily via injection drug use,[6] which means that infections are concentrated mainly within the marginalized drug user populations, who frequently enter into correctional facilities.[7,8]

Despite the potential health burden consequences, HCV screening and treatment efforts in Canadian federal correctional facilities are limited. Testing for HCV occurs voluntarily and in only about one quarter of new admissions; initiation of HCV treatment is sporadic.[1] Until recently, HCV treatment generally has been withheld from illicit drug users—regardless of incarceration status—primarily because of length of treatment, likelihood of adherence, psychiatric side effects, and risk of reinfection.[9–11]

However, 2 (small) observational studies of HCV treatment in correctional populations in the United States reported relatively high treatment success rates.[12,13] On the basis of these reports, the controlled environment of federal prisons, specifically—where sentences served are at least 2 years—may provide a unique opportunity for HCV treatment and prevention. We examined HCV treatment outcomes in a Canadian federal prison population, adding our analysis to the very limited (international) literature on this topic.

METHODS

Sample

We reviewed the medical charts of 114 inmates who were HCV positive from 10 federal correctional facilities (Kent, Matsqui, Ferndale, Mission, Mountain, Regional Health Centre, William Head, Regional Reception and Assessment Centre [Pacific], TRC/PI, Elbow Lake) in the province of British Columbia and who received treatment from November 2000 to April 2003 (treatment sample). Of this sample, outcome information was unavailable for 34 inmates; these inmates were significantly younger and more likely to indicate genotype 1 than were the 80 subjects remaining for analysis (analysis sample).

Treatment Protocol

The inmates eligible for treatment were those who had positive test results for HCV (on the basis of Correctional Services Canada's voluntary testing protocol), had not taken illicit drugs for at least 6 months, possibly were receiving methadone maintenance treatment, and had consented to treatment. Inmates received Rebetron combination therapy containing Rebetol (ribavirin) capsules and Intron A (interferon alfa-2b, recombinant), and duration was based on genotype, reflecting the standard of HCV treatment at the time in Canada.[14] Treatment was discontinued if subjects had positive test results for HCV ribonucleic acid (RNA) after 12 to 24 weeks of treatment. Treatment was recorded as "successful" when the patient showed a sustained virological response, defined as a serum sample negative for HCV RNA measured by a qualitative test sensitive to less than 50 IU/mL, 6 months posttherapy.

Statistical Analyses

Rates and bivariate tables were used to describe the data. The confidence intervals (CIs) around the success rate were calculated with the exact binomial distribution.[15]

RESULTS

The all-male analysis sample had a mean age of 38 years (SD=8.6), and 32.5% were enrolled in methadone maintenance treatment in the prison. About one quarter (21.3%) did not complete treatment, mostly because of side effects or failure to achieve early response. Overall, 66.3% of the analysis sample achieved sustained virological response (Table 1). Those with genotypes 2 and 3, those with injection drug use as a risk factor, and those who completed treatment had higher rates of sustained virological response.

DISCUSSION

Our study found encouraging rates of HCV treatment completion (feasibility) and success (sustained virological response) in the correctional population, which were similar to those reported in community samples[16,17] and those reported in the few correctional studies.[12,13] According to the intention-to-treat analysis—including those who did not complete treatment and those for whom outcome information was not available—the estimated sustained virological response rate for the entire treatment sample would be 51.8% (59 of 114) (95% CI=43.1%, 62.1%). The difference between the analysis and the treatment sample outcome rates was statistically significant ($\chi^2_1=4.1$, $P=.044$); thus, the estimated sustained virological response rate was significantly lower for the latter. However, this success rate still would be considered an acceptable HCV treatment outcome, even for non–drug user samples.[17,18]

Genotype proved significant for treatment outcomes, with genotype 1 associated with lower sustained virological response compared with genotypes 2 and 3, a finding well

TABLE 1—Hepatitis C Virus (HVC) Infection and Treatment Characteristics of Analysis Sample (N = 80), by Percentage of Sustained Virological Response and χ^2 Test

	Sustained Virological Response, % (n)	χ^2
HCV genotype (n)		
1 (38)	47.4 (18)	13.6, $P < .01$
2 (12)	100.0 (12)	
3 (30)	76.7 (23)	
Age, y (n)		
20–34 (28)	75.0 (21)	2.2, $P = .331$
35–49 (42)	64.3 (27)	
50–64 (10)	50.0 (5)	
Methadone maintenance treatment (n)		
Yes (26)	80.8 (21)	3.6, $P = .057$
No (54)	59.3 (32)	
HCV risk factors, self-reported (n)		
Injection drug use (alone or in combination with other risks) (44)	77.3 (34)	7.2, $P = .027$
Noninjection drug use risks (21)	61.9 (13)	
Unknown (15)	40.0 (6)	
Treatment course (n)		
Completed (63)	79.4 (50)	23.1, $P < .01$
Not completed or stopped early (17)	17.6 (3)	
Overall	66.3 (53)	
	(95% CI = 56.1%, 77.6%)	

Note. CI = confidence interval.

established in the literature.[19] The finding that inmates with past injection drug use as an HCV risk factor achieved higher rates of sustained virological response than did those without injection drug use requires further investigation because this may be related to the self-report nature of the variable. The final variable related to increased sustained virological response was treatment completion, which also has been established in the literature.[17]

Caution in the interpretation of results is warranted. The analysis sample was not random (i.e., it excluded individuals who did not submit to voluntary HCV testing or had ongoing drug use), which may constitute a more difficult population for HCV treatment purposes. The extent of generalizability of our findings to other settings or populations thus remains unclear but should not be discounted.

Reducing HCV prevalence among inmates in correctional facilities constitutes a critical opportunity to reduce the public health burden of HCV given that most inmates who will be returning to the community are unlikely to receive treatment there because of their marginalized status. Our study suggested that HCV treatment in infected inmates is feasible and effective. Correctional and health policymakers thus should work toward providing such treatment to infected inmates, in combination with preventive measures. ■

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Contributors

J. Farley conducted the treatment described in the study. S. Vasdev contributed to the analysis plan, coexecuted the analyses, and assisted in writing the brief. B. Fischer co-led the analyses and led the writing of the brief. E. Haydon coexecuted the analyses and assisted in writing the brief. J. Rehm co-led the analyses. T. A. Farley extracted and processed the analysis data. All authors except T. A. Farley conceptualized the brief, interpreted the findings, and revised article drafts.

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Human Participant Protection

The study was approved by the University of British Columbia Clinical Research Ethics Board.

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