Evaluation of the impact of Dublin's expanded harm reduction programme on prevalence of hepatitis C among short-term injecting drug users

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Injecting drug users represent a high risk group for hepatitis C virus (HCV) infection and, in many locations, the majority will test positive for antibody to HCV (anti-HCV) within two years of starting to inject.[1] Although there is evidence of a reduction in rates of unsafe injecting,[2 3] there is little published research demonstrating that programmes that facilitate safe injecting have reduced the occurrence of HCV.[4] Consequently, some commentators are not optimistic that we will see a decrease in HCV prevalence among injecting drug users.[5]

Harm reduction programmes include methadone treatment, education regarding safer injecting and the provision of syringe exchange. These services vastly expanded in Dublin over the period 1991 to late 1993. The number of syringe exchange centres increased from two to eight and the number of community outreach workers and addiction counsellors increased by 74%. We sought to test the hypothesis that, among injecting drug users with short injecting histories, the prevalence of HCV would be lower in those who started injecting during the period after this expansion in services.

The setting for this study was Trinity Court, which is the largest and longest established addiction treatment centre in Dublin. Services provided include counselling, methadone maintenance and detoxification and assessment regarding medical problems associated with drug use such as HCV.

Patients, Method, and Results

Data have been recorded on an ongoing basis on the results of all HCV tests on injecting drug users attending Trinity Court since 1992. In this study, consecutive new attenders, resident in Dublin, with a reported injecting history less than 25 months, tested for anti-HCV between July 1993 and December 1996 were included. We used a third generation enzyme linked immunosorbent assay for anti-HCV (Ortho Clinical Diagnostics, Amersham, England). Positive results were confirmed with a further third generation test.

In all 353 injecting drug users were tested. The primary drug of choice was heroin for 78%, morphine sulphate for 21%, and benzodiazepines for 1%.

Those with injecting histories of less than 13 months were over-represented in the group that started injecting in the period after January 1994 (75.1% *v* 46.5%, χ^2 =30.4, p<0.001) and they were more likely to misuse heroin (86.2% *v* 68.6%, χ^2 = 15.7, p< 0.001). Period of commencement of injecting was not significantly associated with age, sex, employment or injecting status of sexual partner (χ^2 tests).

The prevalence of anti-HCV was 52.1%. Univariate analysis showed that those who started injecting in the period after January 1994 (post-1993 group) and those with injecting histories of less than 13 months demonstrated significantly reduced risks of HCV infection (see table 1). Age over 21 years was weakly associated with increased risk.

Table 1 Period of commencement of injecting, duration injecting, age, sex, partner's injecting status, principal drug injected, and employment status in relation to risk for hapatitis C among injecting drug users with injecting histories of less than 25 months; univariate and multivariate analyses

			Univariate analysis		*Multivariate analysis*	
	Number	*Prevalence of anti-HCV (%)*	*Odds ratio (95% confidence intervals)*	*p value†*	*Odds ratio (95% confidence intervals)*	*p value*
Period when commenced injecting						
Before January 1994 (pre-'94 group)	172	64.5	1.0		1.0	
After January 1994 (post-'93 group)	181	40.3	0.37 (0.24, 0.57)	<0.001	0.43 (0.27, 0.67)	<0.001
Duration since commenced injecting (months)						
1 to 12	216	44.4	1.0		1.0	
13 to 24	137	64.2	2.25 (1.45, 3.48)	<0.001	1.76 (1.10, 2.80)	0.017
Age (years)						
Under 21	168	47.0	1.0		1.0	
21 and over	185	57.7	1.54 (1.01, 2.34)	0.044	1.51 (0.98, 2.34)	0.064
Sex						
Male	241	51.0	1.0			
Female	112	54.5	1.15 (0.73, 1.80)	0.55		
Sexual partner's injecting status*						
Partner injecting	109	53.2	1.0			
No partner injecting	236	52.1	0.96 (0.61, 1.51)	0.85		
Primary drug injected						
Heroin	274	52.2	1.0			
Other	79	51.9	0.99 (0.60, 1.63)	0.96		
Employment status						
Employed	43	41.9	1.0			
Unemployed	318	53.5	1.60 (0.84, 3.06)	0.15		

* n=345, status of partner unknown for eight patients. † Pearson χ^2 test.

Table 2 Association between period of onset of injecting drug use and risk of hepatitis C, adjusted within strata of duration of injecting drug use

	Commenced injecting before Aug '93		*Commenced injecting between Aug '93 and July '94*		*Commenced injecting after July '94*		
	Number	*Prevalence of anti-HCV (%)*	*Number*	*Prevalence of anti-HCV (%)*	*Number*	*Prevalence of anti-HCV (%)*	*p value**
	125	64.8	112	51.8	116	38.8	<0.001
Stratified by duration injecting (months)							
1 to 12	48	60.4	73	46.6	95	34.7	0.003
13 to 24	77	67.5	39	61.5	21	57.1	0.33

* Mantel-Haenszel χ^2 test for trend.

Univariate analysis was repeated with data stratified by length of injecting history (data not shown). This demonstrated a significant reduction in HCV in the post-1993 group with injecting histories of less than 13 months (odds ratio 0.36, (95% confidence intervals 0.21, 0.64) p=0.001) but the reduction was not significant in those with injecting histories of 13 months and over (odds ratio 0.57, (95% confidence intervals 0.28, 1.20) p=0.20). Multivariate analysis was then performed with the three variables that were significant on univariate analysis being entered into a logistic regression equation. This resulted in a weakening of the association with duration since starting injecting (see table 1). Also the effect of age became of borderline significance. There was no evidence of interaction between independent variables.

To further explore for the presence of a trend of reducing prevalence of HCV, subjects were ranked chronologically in terms of their date of commencement of injecting and then divided into thirds—that is, those who began injecting before August 1993, those who started between August 1993 and July 1994 inclusive, and thirdly, those who first injected after July 1994. Table 2 shows the highly significant downward trend in HCV prevalence. When data are stratified by length of injecting history, the trend remains one of reducing HCV prevalence over time in both those with short and longer injecting careers. However, the fall in prevalence is statistically significant only in those with injecting histories of less than 13 months.

Comment

The greater than twofold reduction in likelihood of HCV infection provides some objective evidence of a decrease in unsafe injecting practices after the service expansion. Unfortunately, we were unable to control for other factors that may explain this decline in HCV. Alternative explanations might include a possible reduction in overall injecting frequency among the more recent injectors or continued rates of unsafe injecting but confined within safer groups. Therefore, while acknowledging that our detection of a declining prevalence of HCV infection after an expansion in harm reduction services does not conclusively prove causality, we believe that this is an encouraging finding. However, we consider it premature to assume that this protective effect will persist over time, as a reduced rate of unsafe injecting by people within this group could still lead to a very high prevalence of HCV infection.[5] It may simply take longer to do so.

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