SHORT REPORT

Retrospective cohort study examining incidence of HIV and hepatitis C infection among injecting drug users in Dublin

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Unsafe injecting results in increased rates of hepatitis C and HIV among populations of injecting drug users. It is well established that it is unsafe to use needles or syringes that have previously been used by another injecting drug user.[1] There is growing evidence that it is unsafe to share a "cooker", filter, or other injecting paraphernalia with another injector.[1] Most injecting drug users in Dublin report sharing of syringes and injecting paraphelalia.[2] In Dublin, the prevalences of HIV and hepatitis C among injecting drug users were found to be 1.2% and 61.8% respectively.[3] The incidence of hepatitis C among injecting drug users has now been examined in North America, Australia, and a number of European countries and has ranged from 16 to 38 per 100 person years.[1 4 5] We sought to measure the incidence of hepatitis C and HIV among injecting drug users in Dublin.

Table 1 Incidence of hepatitis C among injecting drug users in Dublin, by general and drug misuse characteristics

	Number	Seroconvertors	Person years at risk (PYAR)	Incidence (per 100 PYAR)	95% Confidence intervals*	p Value†
Total	100	67	101.6	66	51 to 84	
Gender						
Male	66	44	63.0	70	51 to 94	
Female	34	23	38.6	60	38 to 89	0.54
Age ,(y)						
Under 21	57	39	59.4	66	47 to 90	
⩾21	43	28	42.3	66	44 to 96	0.98
Employment						
Unemployed	88	63	89.5	70	54 to 90	
Working (or at school)	12	4	12.2	33	9 to 84	0.13
Current sexual relationship						
No partner/non-injecting partner	68	45	70.5	64	47 to 85	
Partner injects	29	20	26.9	74	45 to 115	0.57
Unknown	3	2	4.2	48	5.8 to 172.0	
Imprisoned before first test						
No	55	35	65.1	54	37 to 75	
Yes	36	25	26.9	93	60 to 137	0.03
Unknown	9	7	9.7	72	29 to 149	
Time since onset of injecting (months)						
1 to 12	67	47	63.6	74	54 to 98	
13 or more	33	20	37.7	53	32 to 82	0.21
Principal drug injected						
Heroin	72	45	75.8	59	43 to 79	
Other or combination	28	22	25.9	85	53 to 129	0.17
Daily drug expenditure						
Up to Ir£65	76	48	80.4	60	44 to 79	
More than Ir£65	24	19	21.0	90	54 to 141	0.12
Route of opioid use‡ at first testing						
Not all injected	18	7	27.1	26	10 to 56	
All injected	67	50	53.6	93	69 to 123	0.006
Unknown	15	10	21.0	48	23 to 88	
Benzodiazepine misuse§						
No	50	33	55.3	60	41 to 84	
Yes	45	29	40.3	72	48 to 103	0.46
Unknown	5	5	6.0	83	27 to 194	
Imprisoned between tests						
No	77	48	69.1	69	51 to 92	
Yes	15	12	21.9	55	28 to 96	0.46
Unknown	8	7	10.7	65	26 to 135	
Addiction treatment between tests						
None or less than 3 months treatment	67	42	56.2	75	54 to 101	
More than 3 months	31	23	44.4	52	33 to 78	0.16
Unknown	2	2	1.1	182	22 to 657	

*Confidence intervals for the incidence rate were calculated using the exact confidence limits for a Poisson count. †p Values were generated by comparing incidence rates using the z test. ‡Benzodiazepines were the principal drug injected in three cases. §Benzodiazepine misuse was determined on the basis of urine toxicology (Immunoassay EMIT test).

PATIENTS, METHODS, AND RESULTS

Our methodology replicated that of van Beek.[4] Since 1992, all attenders at Trinity Court drug treatment centre with a history of injecting were encouraged to consent to hepatitis C and HIV testing during their addiction treatment. Data on the risk factors examined in this study were obtained via a semi-structured interview conducted by a doctor, and included information on demographic, treatment, forensic, and drug misuse characteristics.

The initial screen for HIV antibodies involved two enzyme linked immunosorbent assays (EIA). Positive tests were confirmed with the western blot assay. Testing for hepatitis C antibodies was performed with a second or third generation EIA. The incidence of infections was measured using the person years method.[1 4 5] The date of the first negative test represented the starting point for all patients when calculating their person years at risk. The end point was the date of the last negative test for those who remained seronegative. The estimated date of seroconversion was used as the end point for those who seroconverted and this was calculated by finding the midpoint between their negative and positive tests.

Three hundred and thirteen injecting drug users had a negative hepatitis C test result when first tested between November 1992 to September 1998. The incidence study ended nine months later, and by this time 100 (31.9%) from this group had undergone repeat testing during a subsequent treatment episode. At the time of their initial negative test, the median age of the cohort was 20.5 years and the median period since commencement of injecting was just six months. Eighteen patients were principally heroin smokers, but reported injecting occasionally.

Regarding hepatitis C, 67 seroconverted during the study period. The overall incidence of hepatitis C was 66/100 person years (95% confidence intervals 51 to 84/100 person years). A history of imprisonment was associated with significantly increased hepatitis C incidence, while the group who usually smoked heroin demonstrated reduced incidence (see table 1). If the analysis is confined to the 74 patients who were retested within 24 months, 45 (61%) seroconverted, yielding an incidence of 100 infections/100 person years (95% confidence intervals 73/100 to 134/100 person years).

During the study, 655 injecting drug users tested negative for HIV and 164 (25.0%) underwent repeat testing. There were two seroconversions. The incidence of HIV was 0.7/100 person years (95% confidence intervals 0.1 to 2.5/100 person years).

COMMENT

The detected hepatitis C incidence in Dublin is substantially higher than the corresponding figures from studies of similar design in similar settings elsewhere, and contrasts with a comparatively low HIV incidence. However, these findings are consistent with the prevalence rates of these infections in Dublin.[3] The cohort examined was young and comprised mainly of recent onset injectors. Such characteristics are among those most frequently associated with increased hepatitis C incidence.[1 4] Programmes that aim to halt the spread of hepatitis C will need to specifically target very recent onset injecting drug users.

A minority of patients underwent repeat testing for either HIV or hepatitis C. It is possible that those who did re-attend for further assessment and addiction treatment were injecting more frequently and more at risk. This could artificially inflate the estimated incidences.

In common with van Beek's study, we found that those who had been imprisoned before their initial negative test demonstrated higher hepatitis C incidence.[4] The reason for this association is unclear. As imprisonment predated entry into the study, it cannot be causal. It has been suggested that those who have been imprisoned may have a lifestyle that involves increased risk taking behaviour in general, and this may include increased unsafe injecting.[4]

Most heroin users smoke the drug before moving on to injecting. Those who principally smoked heroin at the study outset had a significantly lower hepatitis C incidence. Strategies that might delay or reverse the progression form heroin smoking to injecting should be developed and may successfully reduce hepatitis C incidence.[6]

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