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Similar decline in incidence rates for HIV and HCV over nearly two decades in a cohort of drug users in Amsterdam, the Netherlands

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Background

Injection drug users (IDU) are at high risk for HIV and hepatitis C (HCV) infections. Since the start of the HIV epidemic, the HIV incidence substantially declined because of a decrease in risk behaviour. However, several studies have shown a less pronounced decline in the HCV prevalence and incidence, which remained stable and high. Here we report the HIV incidence among IDU over nearly two decades and compare that with the HCV incidence.

Objective

To compare HIV and HCV incidence, and temporal changes in HIV transmission routes and injecting and sexual risk behavior in IDU

Methods

Drug users participating in the ongoing Amsterdam Cohort Study return every 4–6 months since 1985. Every visit participants complete a standardized questionnaire and blood is drawn for HIV testing (ELISA, confirmation Western Blot). We used a third-generation ELISA to retrospectively test for HCV antibodies in participants with at least 1 follow up visit (AxSym HCV version 3.0; Abbott, Wiesbaden, Germany).

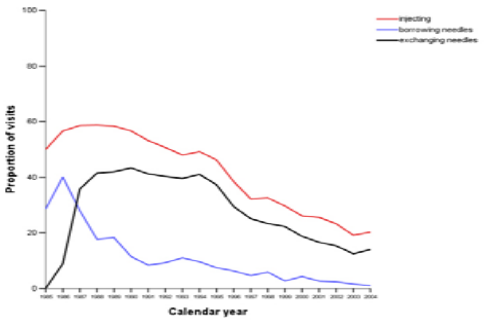

Figure 1: Proportion of all visits per calendar year at which injection-related factors were reported among 1315 DU, HIV-negative on enrolment, from the Amsterdam Cohort Studies, 1985-2003

Incidence rates were calculated using person-time methods. To compare the curves, a smooth trend was assumed for both incidence curves over calendar time. If the trends have the same pattern, then the difference between the curves is a constant on a logarithmic scale.

Using Poisson regression, the trend in HIV incidence among 1315 HIV-negative DU was studied. Trends in injecting and sexual risk behaviour were evaluated using the Generalised Estimating Equations method.

Results

HIV incidence and risk behaviour

1315 DU (856 IDU and 459 non IDU) were at risk for HIV infection. 93 DU seroconverted during follow up. The HIV incidence was 7 per 100 person years (PY) in 1986 and 0-0.5/100 PY after 1999. Compared with the period before 1996, heterosexual risk behaviour played the most important role in HIV transmission among DU seroconverting after 1996: OR 15.6 (95% CI: 2.6-94.6). Over time, both injecting and borrowing needles have significantly declined (fig 1). Sexual risk behaviour at follow-up visits decreased before 1996, but it did not decrease further after this period.

HCV incidence

Among 960 IDU who ever injected (ever-IDU) 82.2% had HCV antibodies at study entry and 58 seroconverted for HCV during follow up. 26.2% of ever-IDU were HIV positive at study entry and 89 seroconverted for HIV.

The HCV incidence rate peaked in 1989 at 27.5/100 PY and dropped to 3/100 PY from 1996 onwards. The HCV incidence is estimated to be 4.4 times the HIV incidence. Testing the shape of both incidence curves revealed no statistically significant difference in the incidence patterns (fig 2).

Conclusions

The incidence rates of HIV and HCV were very high in the early 1980's. Both HIV and HCV incidence among DU from the Amsterdam Cohort Study have declined since 1985. We found a similar pattern of the HIV and HCV incidence over nearly two decades; the decline is accompanied by a reduction in injecting risk. Sexual risk behaviour continued and at present new HIV seroconversions are mainly related to unprotected heterosexual contacts, indicating that prevention programs for DU should also pay specific attention to the importance of safe sex practices.

The HCV incidence was on average 4.4 times the HIV incidence, most likely due to the higher background prevalence of HCV when compared to HIV, the higher efficiency of HCV transmission, and more potential sources of HCV exposure in the injection setting (like cookers). HIV risk reduction measures including needle exchange programs and low threshold methadone programmes appear to have had an important impact on the sharp decline of both HIV and HCV incidence.

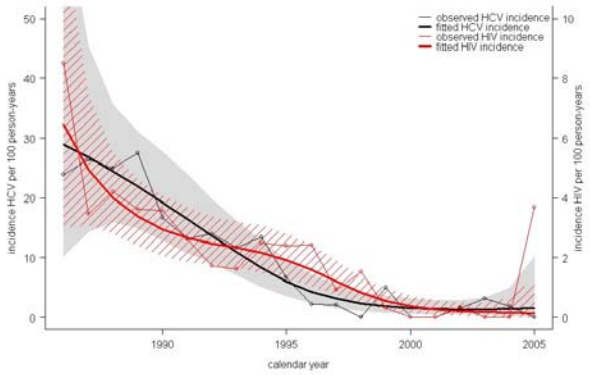

Figure 2: Observed and fitted HIV (red line) and HCV (black line) incidence in ever-IDU in the ACS, 1985-2005

Conclusion

Our study shows a similar decline for HIV and HCV incidence in a cohort of injecting drug users over nearly twenty years