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[Association between harm reduction intervention uptake and recent hepatitis C infection among people who inject drugs attending sites that provide sterile injecting equipment in Scotland.](#)

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Allen E.J., Palmateer N.E., Hutchinson S.J. et al.

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National survey of injectors attending services supplying injecting equipment suggests methadone maintenance plus an abundant supply of needles and syringes help protect Scottish injectors from infection by hepatitis C.

SUMMARY The featured study related the likelihood of a national Scottish sample of [needle exchange](#) attendees having recently become infected with hepatitis C to the degree to which they received adequate supplies of injecting equipment and their recent involvement in methadone maintenance programmes.

In 2008 and 2009 people who had injected in the past year were approached at 22 agencies and 81 pharmacies which provided sterile injecting equipment, about a 4 in 10 sample of such services selected to be broadly geographically representative. Research interviewers took the roughly two-thirds of those who agreed to join the study through a questionnaire about their characteristics, injecting histories, ways they injected which might risk infection, times in prison, and their use of health services and (the focus of the present report) harm reduction interventions.

From the answers researchers calculated over the past six months what proportion of each individual's requirement for injecting equipment (assumed equal to the number of times they had injected) could have been met by unused equipment they obtained from needle and syringe services or other sources. Because so many said they got what they needed, the sample was divided into those who said they got at least twice their needs for needles and syringes, versus those who got less than twice. With regard to methadone maintenance, the sample was categorised as currently in treatment, not currently but in the last six months, versus not in the last six months. These classifications were combined. Presumed most highly protected from infection were people currently on methadone and who had not injected in the last six months or obtained at least twice their equipment needs. Those not on methadone and who obtained less than twice their equipment needs were considered to have a low level of protection. Other combinations found among the sample were considered to have a medium level of protection.

The key step in the analysis was to relate the above classifications of participation in harm reduction interventions to whether participants had recently become infected with hepatitis C. Blood tests used by the study could distinguish between long-standing infection and recent infections acquired roughly within the past one or two months. Of the 2,555 injectors tested, 54% had a longstanding infection so were excluded from the analysis. Of the remainder, 24 had signs of recent infection and 1,116 tested as infection-free. At issue was whether these 1,116 who had avoided infection had made greater use of the harm reduction interventions assessed by the study; if they had, the findings would be consistent with these interventions actually conferring the expected protection.

Main findings

Of greatest interest was the analysis which assessed the effect of each intervention after accounting for the other and for characteristics actually or related to infection – region, sex, homelessness, imprisonment, time since onset of injecting, and excessive drinking. Once all these had been taken in to account, relative to less abundant supply, at least twice-needs injecting equipment supply was associated with a statistically significant reduction of nearly 70% in the [chance](#) of becoming recently infected with hepatitis C. Compared to patients who left methadone treatment in the last six months, those still on methadone also had about 70% lower odds of having recently become infected, though these results missed statistical significance. Having not been on methadone at all in the past six months was also associated with a lower risk of recent infection.

The same kind of analysis also tested whether combining methadone and injecting equipment supply into what was presumed to be an overall high, medium or low level of protection actually was



Key points

A national sample of injectors attending needle/syringe supply services in Scotland were surveyed about their recent service use and tested for signs of recent infection with hepatitis C.

Being supplied with at least twice their needs for needles and syringes was associated with a lower risk of infection as (but not significantly) was being in a methadone treatment programme, especially in the Glasgow area.

With other UK-wide findings, the authors argue their study suggests high-coverage needle and syringe supply helps prevent spread of hepatitis C among injectors, and that ending methadone treatment heightens the risk of infection.

These findings are however associations which may or may not reflect causal links and might be due to factors other than uptake of harm reduction interventions.

associated with recent infection. Relative to the low level, both high and medium levels of protection were associated with a halving in the **chance** of becoming recently infected with hepatitis C, but these results were not statistically significant.

When the Glasgow area [Scotland's largest conurbation and a focus for illegal drug use] was analysed separately, the reduced risk of infection associated with now being on methadone versus having left this treatment during the last six months almost reached statistical significance, while in the rest of Scotland the association was very weak and did not approach significance.

The results of the study could also be used to estimate that somewhere between 11% and 22% of injectors in Scotland became infected with hepatitis C per year of their injecting careers.

The authors' conclusions

The Glasgow data from the featured study had been included with data from Birmingham, Bristol, Leeds, London and Wales in a [UK-wide analysis](#). Like the featured study, this also found that high-coverage participation in needle and syringe programmes was linked to a lower risk of becoming infected with hepatitis C. The featured study differed from this UK-wide analysis by including sterile injecting equipment supplies from any source, not just from injecting equipment supply services such as needle exchanges, and in stipulating twice-needs supply as the dividing line rather than obtaining at least enough sterile injecting equipment to have used a fresh set for each injection.

The UK-wide analysis also found that [opioid substitution therapy](#) such as methadone maintenance was significantly associated with a reduced risk of infection. Across Scotland, in the featured study this was not the case, but the results from Glasgow were consonant with the UK-wide trend and narrowly missed reaching statistical significance. There too, having recently (during the last six months) ceased methadone treatment was associated with a high chance of around the same time becoming infected with hepatitis C, suggesting that the time shortly after ending treatment can be a high-risk period.

The UK analysis also found that injectors who combined high coverage needle exchange with opioid substitution therapy had just a fifth the odds of having recently become infected, compared to injectors who had used neither service to the degree set by the study.

Possibly the sample recruitment strategy in the featured study led to the protective impact of methadone being underestimated. It meant that among methadone patients, the study would have disproportionately sampled those who continued to inject often enough to obtain injecting equipment, possibly because their methadone treatment was sub-optimal. Also, all the participants were in some degree of contact with harm reduction services; comparison with injectors entirely out of contact might have thrown those services' protective effect in to sharper relief.

COMMENTARY In Scotland it seems that even the highly transmissible hepatitis C virus has been intercepted by needle exchange, and possibly too by methadone maintenance treatment. Reaction to these encouraging findings must be tempered by awareness that such studies cannot establish what causes what, only what is associated with what. Possibly, for example, injectors keen enough to obtain twice as much sterile equipment as they need might have protected themselves from the virus, even if they had been unable to get those supplies. The dividing line of at least twice as much equipment as is needed does not have the common sense relevance of the criterion used by the [UK-wide study](#) – having at least enough equipment to use a fresh set each time. Why having at least this much surplus equipment would confer extra protection needs to be explained. Possibly this benchmark is not identifying more effective service provision or more complete service access, but people concerned enough to be involved in re-distributing fresh equipment, or those [injecting relatively infrequently](#) so not at risk as often as other injectors.

Also in need of explanation is why (contrary to the researchers' expectations) not having been on methadone at all in the past six months would be associated with a lower risk of recent infection than having been on methadone at some time during that period and then left. The key here is that the study was concerned with *recent* infection. Assuming as the authors suggests that the period after ending methadone treatment is particularly risky, former patients who ended it over six months ago are likely to have been among the long-term infected participants excluded from the analysis, as would injectors who have never been prescribed methadone. It should also be stressed that at the finest level of analysis, numbers were very small. For example, just nine injectors in the Glasgow area had left methadone treatment in the past six months, of whom just two became infected at around the same time, creating the relatively high risk associated with ending treatment in the region. It seems possible that these were highly atypical individuals who would have become infected even if they had not left treatment.

Nevertheless, the findings along with those from the rest of the UK strengthen the [contention](#) that abundant, easy-to-access methadone prescribing and injecting equipment supply can help bring the hepatitis C epidemic under control. The reverse implication is that taking our feet of these intervention pedals risks losing control of the epidemic.

Such findings were enough [to convince](#) Britain's National Institute for Health and Clinical Excellence (NICE) that commissioners should aim to provide every injector more than enough to use a sterile set of injecting equipment each time. But NICE also warned that while high-coverage syringe distribution and substitute prescribing programmes may be enough to control HIV, they will not on their own substantially curb hepatitis C; this requires a multi-faceted programme, supplementing these interventions with early detection and anti-viral treatment of injectors already infected.

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