Effectiveness of needle-exchange programmes for prevention of HIV infection

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Authors' objectives
To discover whether needle exchange programmes for drug users affect HIV seroprevalence.

Searching
MEDLINE was searched from 1984 to 1994, communication was made with public health officials, researchers and the Centers for Disease Control and Prevention.

Study selection
Study designs of evaluations included in the review
Published reports of HIV seroprevalence surveys which included 50 or more drug users; reports and other sources of information about implementation of needle exchange programmes (NEPs) in corresponding cities.

Specific interventions included in the review
Provision of needle exchange programmes.

Participants included in the review
Cities throughout the world.

Outcomes assessed in the review
HIV seroprevalence was assessed.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
Seroprevalence surveys had to include 50 or more drug users. Cities were included if HIV seroprevalence had been measured in injecting drug users in 2 or more calendar years, and basic information on NEP implementation was available. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
Population size, estimated number of injecting drug users, and indices of NEP scope for each city were recorded from published material and information provided by experts. The rate of change of seroprevalence was calculated between the first and last available survey for cities with NEPs established during the period spanned by the surveys, and for cities without NEPs.

Methods of synthesis
How were the studies combined?
Average slopes for rate of change in HIV seroprevalence were derived from regression calculations and the averages weighted to reflect the accuracy of the estimate. The difference between average slopes for cities with NEPs (n=29) and cities without NEPs (n=52) was calculated and tested for significance using a linear model. A subgroup analysis was carried out to assess the effectiveness of NEPs established when HIV seroprevalence among drug users was below 10%.

How were differences between studies investigated?
Results of the review
A total of 214 papers satisfied the inclusion criteria. 81 cities had both HIV seroprevalence figures for more than 1 year and information on NEP implementation.

In cities with NEPs, HIV seroprevalence among injecting drug users decreased by 5.8% on average, whereas in cities without NEPs, HIV seroprevalence increased by 5.9%. The average annual change in seroprevalence was 11% lower in cities with NEPs (95% CI: -17.6 to -3.9, p=0.004).

Authors' conclusions
These results strongly support the view that needle exchange programmes are effective in reducing HIV incidence among injecting drug users.

CRD commentary
A convincing review, particularly in view of its world-wide coverage. Although the search strategy did not include all potential databases, other sources were searched and considerable effort was made to locate unpublished literature, which is likely to be a more appropriate strategy for this particular review than a conventional search for published literature.

Implications of the review for practice and research
Needle exchange programmes should be established to prevent transmission of infection by the use of injected drugs.

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