Cost-effectiveness of needle and syringe exchange for the prevention of HIV in New York City

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to assess the cost-effectiveness of the needle and syringe exchange programme, compared with no programme, for the prevention of human immunodeficiency virus (HIV). The authors concluded that needle and syringe exchange was a cost-effective intervention. The methods were valid and the authors' conclusion appears to be robust.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of participation in a needle and syringe exchange programme compared with no such participation for the prevention of human immunodeficiency virus (HIV).

Interventions
The participation of injecting drug users in a needle and syringe exchange programme, which allowed the exchange of used needles and syringes for new sterile equipment, was compared with no participation.

Location/setting
USA/community.

Methods
Analytical approach:
A deterministic decision tree was used to synthesise the available evidence. The time horizon was lifetime and the authors stated that the study was conducted from a government perspective.

Effectiveness data:
The probability estimates, used to populate the decision model, were based on a selection of published evidence. The reduction in seroprevalence associated with the needle and syringe exchange programme was obtained from a small-area analysis and a prospective study. The HIV seroprevalence among injecting drug users came from a programme report. The main clinical parameter was the transmission rate for HIV.

Monetary benefit and utility valuations:
The utility values for both an HIV-negative and an HIV-positive injecting drug user were derived from the literature.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the summary benefit measure, and were discounted at a rate of 3%.

Cost data:
The costs included those of the interventions and the health care resources associated with HIV. The costs of the needle and syringe exchange programme were from an institution running the programme in New York City and the HIV costs were based on patients enrolled in Medicaid. All costs were at a total category level and were expressed in US dollars ($) at 2005 prices. The discount rate was 3%.

Analysis of uncertainty:
One-way sensitivity analysis was carried out on the clinical inputs to investigate the stability of the results. The sources of alternative data and the ranges of values were presented.

**Results**

The total costs of the exchange programme were $63,027 compared with $64,339 for no programme. The associated QALYs were 20.57 with the needle and syringe exchange programme and 20.56 with no programme.

No participation was dominated as it was less effective and more costly than the needle and syringe exchange programme.

The sensitivity analysis demonstrated the cost-effectiveness of needle and syringe exchange over the plausible values of HIV seroprevalence, and of the reduction in HIV seroprevalence associated with the exchange programme.

**Authors’ conclusions**

The authors concluded that needle and syringe exchange was a cost-effective intervention for the prevention of HIV.

**CRD commentary**

**Interventions:**

The selection of the comparators was appropriate in that they reflected the usual practice in the authors’ setting.

**Effectiveness/benefits:**

The authors provided very little information on the methods used to identify the primary sources of data. It appears that a selection of relevant studies was used. A key model input, which was the transition probability associated with needle and syringe exchange, was obtained from a report of a programme conducted in New York City. The estimates of the programme efficacy were from published studies, but the details of these sources were not given, which makes it impossible to ascertain their quality. The use of QALYs was appropriate as they allow cross-disease comparisons to be made, but the derivation of utilities was not discussed and their suitability for the population cannot be established.

**Costs:**

The economic analysis was consistent with a governmental perspective. The costs were only presented as total categories and the unit costs and resource quantities were not reported. The sources of all data were given and the price year was reported, which will allow reflation exercises for other time periods. The authors made some statements about a societal perspective, but the methods and the results did not assess the cost-effectiveness from this perspective.

**Analysis and results:**

The costs and benefits were appropriately synthesised, using an incremental approach. The findings were clearly presented. The incremental cost-effectiveness ratio was not presented, but this was appropriate given that the programme was a dominant strategy. The issue of uncertainty was addressed through one-way analysis, which was clearly described, but has limitations. There were limitations in the data inputs, but the authors used conservative estimates throughout, which means that their conclusions are likely to be robust.

**Concluding remarks:**

The methods were valid and the authors’ conclusion appears to be robust.

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