Cost-effectiveness of an HIV risk reduction intervention for adults with severe mental illness

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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.

Health technology
Three interventions for the reduction of HIV risk were analysed in the study: a single session, one-to-one HIV/AIDS risk reduction educational programme (single session programme); a cognitive-behavioural risk reduction intervention in which clients attended seven 90-minute group sessions focussing on HIV risk-related behavioural change (multi-session programme); and a seven-session group intervention teaching participants effective communication strategies for disseminating HIV prevention messages to friends and acquaintances (advocacy training).

Type of intervention
Secondary prevention.

Economic study type
Cost-utility analysis.

Study population
The study populations comprised patients (both men and women) with severe mental illness.

Setting
The setting of the study was a mental health clinic. The economic study was carried out in the USA.

Dates to which data relate
Data on effectiveness and resource use were gathered from a sample of patients followed in 1992 and studies published between 1993 and 1997. The price year was 1998.

Source of effectiveness data
The effectiveness data were derived from different sources: a single study (involving 104 seriously mentally ill men and women and randomised to receive one of the three study interventions) and a review of the literature, supported by authors' assumptions. However, data on the single study were not reported.

Link between effectiveness and cost data
The costing was undertaken retrospectively on a patient sample different from that used in the effectiveness analysis.

Modelling
A mathematical model of HIV transmission was used to assess risk of contracting or transmitting HIV on the basis of patient reports of their sexual behaviour. As a result, the number of HIV infections averted by the intervention was computed. Authors' assumptions were used to construct the decision model and were based on published studies.
Outcomes assessed in the review
The outcomes assessed from the literature and used as input parameters in the model were HIV prevalence; condom effectiveness; per-act transmission probabilities for receptive anal sex, insertive anal sex, receptive vaginal sex, or insertive vaginal sex; and undiscounted number of quality-adjusted life-years (QALYs) saved per prevented infection.

Study designs and other criteria for inclusion in the review
Not reported.

Sources searched to identify primary studies
Not reported.

Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
Six primary studies were used as sources for the effectiveness evidence.

Methods of combining primary studies
Primary studies were not combined since each study provided a single outcome estimate.

Investigation of differences between primary studies
Not reported.

Results of the review
The results of the review were as follows:

HIV prevalence was 0.024 (range: 0.018 - 0.05).

Condom effectiveness was 0.9 (range: 0.8 - 1).

Per-act transmission probabilities were 0.02 (range: 0.015 - 0.025) for receptive anal sex, 0.0006 (range: 0.00045 - 0.00075) for insertive anal sex, 0.0014 (range: 0.00105 - 0.00175) for receptive vaginal sex, and 0.0006 (range: 0.00045 - 0.00075) for insertive vaginal sex.

The undiscounted number of QALYs saved per prevented infection was 16.35 (range: 19.33 - 12.85).

Methods used to derive estimates of effectiveness
The authors made some assumptions used in the decision model.

Estimates of effectiveness and key assumptions
The assumptions made were not reported.
Measure of benefits used in the economic analysis
The benefit measure used in the economic analysis was the number of QALYs saved. This was obtained using the decision model, and a 3% discount rate was used. However, QALYs were not reported and only the number of infections averted per 100 patients was shown.

Direct costs
A 3% discount rate was used for costs. Unit costs and quantities of resources used were not reported separately. The cost/resource boundary adopted reflected the perspective adopted in the study. The following categories of direct costs were included in the analysis: staff compensation, materials, transportation, and overhead. Study recruitment, survey work and other activities associated with the implementation of the study were not included in the analysis. The estimation of unit costs and information on resource use were derived from the literature. Total costs were obtained using modelling. The price year was 1998. All costs were inflated to 1998 using the Consumer Price Index.

Statistical analysis of costs
Statistical analyses were not carried out.

Indirect Costs
Patients' payments to participate in the programme were included in the analysis to take into account the time spent for their participation in the programme. A 3% discount rate was used for future indirect costs and 1998 prices were used. The source of the indirect cost was not stated. The cost per session was $32.56.

Currency
US dollars ($).

Sensitivity analysis
One-way sensitivity analyses were carried out on all key model parameters in the decision model, due to the uncertainty around cost and effectiveness estimates.

Estimated benefits used in the economic analysis
The number of infections averted per 100 patients was 0.041 with single-session, 0.087 with multi-session, and 0.138 with advocacy training for men, and 0.098 with single-session, -0.041 with multi-session, and 0.019 with advocacy training for women.

Cost results
Average intervention costs per patients were $177.69 with single-session, $629.05 with multi-session, and $785.85 with advocacy training for both men and women.

Synthesis of costs and benefits
An incremental cost-utility analysis was carried out to combine costs and benefits.

The average cost per QALY saved was $26,305 with single-session, $60,279 with multi-session, and $41,980 with advocacy training for men; and $3,008 with single-session, not effective with multi-session, and $465,994 with advocacy training for women.

The incremental analysis showed that, for men, the incremental cost per extra QALY saved was $90,767 with multi-session over single-session, while the extra cost of a QALY saved with advocacy training was $11,241 over multi-session and $48,585 over single-session. As a result, the advocacy training intervention represented the most cost-
effective programme for men.

As regards women, the single session option was the dominant strategy, since it was more effective and cheaper than the advocacy training intervention.

Sensitivity analyses indicated that single-session remained the most cost-effective intervention for women, but the cost-effectiveness of advocacy training for men was affected by duration of intervention effectiveness, prevalence of infection, per-contact transmission probabilities, and annual discount rate.

Authors' conclusions
The authors concluded that the advocacy training intervention was the most cost-effective programme for men, while the single-session intervention represented the dominant strategy for women. The authors also pointed out that gender consideration was crucial for the correct assessment of intervention for HIV prevention among mentally ill patients.

CRD COMMENTARY - Selection of comparators
All the selected interventions appeared to represent feasible alternatives for the prevention of HIV among mentally ill patients. You, as a user of this database, should assess whether a HIV prevention intervention is currently implemented in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness evidence derived from a single study was combined with data obtained from the literature to populate the decision model. However, details of the single study were not reported and only the sample size and the use of randomisation were indicated. In addition, a systematic review of the literature was not carried out and it was not clear whether the authors considered the validity of the data and the impact of differences among primary studies on the estimated variables. To take into account the uncertainty around the estimates, several sensitivity analyses were carried out.

Validity of estimate of measure of benefit
The number of QALYs saved with each programme was used as benefit measure and it appears to have been appropriate. It also permits comparisons with other health interventions. A decision model was used and future benefits were discounted. However, the actual number of QALYs was not reported.

Validity of estimate of costs
The perspective of society was adopted in the analysis and it appears that all relevant categories of costs were included in the costing. The price year was reported. However, unit costs and quantities of resources used were not reported separately and the costing was carried out retrospectively using data from the literature. Costs were treated deterministically, although several sensitivity analyses were performed.

Other issues
The authors made some comparisons of their findings with those from other studies. The authors appear to have presented their results selectively in terms of costing, and total QALYs were absent, although the sensitivity analysis results were fully reported. The issue of the generalisability of the study results to other settings was not addressed but several sensitivity analyses were carried out on key parameters, therefore enhancing the external validity of the study. The authors presented some limitations of their study, mainly related to small sample size and the self-reported behavioural data, both resulting in potential random errors not controlled for in the sensitivity analyses. The study included patients with severe mental illness and this was reflected in the authors' conclusions.

Implications of the study
The authors highlight the fact that the implementation of HIV prevention programmes represents a crucial factor when considering men or women with severe mental illnesses. The results of this study would be useful to support the decisions of policy makers.

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