Resource utilization and cost-effectiveness of counselor- vs. provider-based rapid point-of-care HIV screening in the emergency department

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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
This study assessed the cost-effectiveness of HIV screening when offered by a member of the emergency department staff or by an HIV counsellor. The authors concluded that the cost-effectiveness of counsellor-based screening in an emergency department setting compared favourably with other screening programmes in the USA. Overall, despite some reporting limitations, the authors' conclusions seem reasonable.

Type of economic evaluation
Cost-utility analysis

Study objective
The study assessed the cost-effectiveness of HIV screening offered by a member of the emergency department staff or by an HIV counsellor.

Interventions
The interventions compared were a no screening programme, an emergency department provider-based HIV screening strategy, and a counsellor-based HIV screening strategy.

Location/setting
USA/emergency care

Methods
Analytical approach:
The Cost-Effectiveness of Preventing AIDS Complications (CEPAC) model (Freedberg, et al. 2001, see 'Other Publications of Related Interest' below for bibliographic details) was used to extend data obtained from a trial that compared provider-based HIV screening with counsellor-based HIV screening. The time horizon of the study was the lifetime of the patient. The authors reported that a societal perspective was adopted.

Effectiveness data:
The natural history of HIV and AIDS parameters, antiretroviral treatment effectiveness, sensitivity and specificity of HIV testing were from the data sources used by the CEPAC model. Rates of test offer and rates of test acceptance came from a randomised clinical trial (the USHER trial; Walensky, et al. 2011, see 'Other Publications of Related Interest' for bibliographic details).

Monetary benefit and utility valuations:
The authors did not report any details of the sources used for utility estimates.

Measure of benefit:
Quality-adjusted life-years (QALYs) gained were used as the summary measure of benefit. As benefits could be generated over the lifetime of the patient, future benefits were discounted at an annual rate of 3%.

Cost data:
The costs included: provider-based HIV testing (including nurse-assistant time to offer and conduct HIV testing, house-officer time to review negative results, and attending-physician time to review reactive results); counsellor-based HIV
testing (including counsellor time to offer and conduct HIV testing, review negative results, and review reactive results); HIV care; antiretroviral therapy; CD4 cell count and HIV RNA testing; treatment of opportunistic infections; and mortality. HIV testing resource use costs came the USHER trial. Valued using unit costs were from an emergency department in Massachusetts, USA. All other costs were from studies used by the CEPAC model. The price year was 2009. As costs could be incurred over the lifetime of the patient, future costs were discounted using an annual rate of 3%. All costs were reported in US $.

Analysis of uncertainty:
A series of one-way and two-way sensitivity analyses were undertaken by varying base-case values over a range of plausible values to assess the impact of uncertainty on the results.

Results
The discounted average quality-adjusted life-expectancy gained were 218.38 months with no screening; 218.40 months with provider-based screening; and 218.43 months with counsellor-based screening.

The discounted average lifetime costs were $1,040 with no screening, $1,160 with provider-based screening, and $1,310 with counsellor-based screening.

Costs and outcomes were combined using an incremental cost-utility ratio (the additional cost per QALY gained). When compared with no screening, the incremental cost-utility ratio of provider-based screening was $58,700 per QALY gained. When compared with provider-based screening, the incremental cost-utility ratio of counsellor-based screening was $64,500 per QALY gained.

The authors reported that results were sensitive to the offer and acceptance rates of HIV testing, and the capacity of providers to target-screen. The results remained robust to changes in undiagnosed HIV prevalence and HIV testing costs.

Authors’ conclusions
The authors concluded that the cost-effectiveness of counsellor-based screening in an emergency department setting compared favourably with other screening programmes in the USA.

CRD commentary
Interventions:
The interventions were reported adequately.

Effectiveness/benefits:
The clinical and effectiveness estimates were from previously published studies. Parameters that were directly influenced by the interventions under study (test offering and test acceptance) were from a previously published randomised controlled trial. Although brief details of the trial were reported, full references for the trial were provided. Other model parameters, such as treatment effectiveness, HIV testing sensitivity and specificity, and HIV natural history were already embedded in the CEPAC model. Given that studies based in this model had been extensively published in high impact journals, it was likely that all relevant information was included in the model estimates. However, this was not explicit in the paper; insufficient detail was presented to test this belief. The authors did not report any details of the sources used to derive utility estimates. This lack of reporting was a limitation and meant that validity assessment of the utility estimates used could not be made.

Costs:
The authors reported that a societal perspective was adopted in the economic analysis. However, given the lack of information on which categories of cost were included under each resource use item, it was not possible to determine if indirect costs were included in the analysis. The authors reported that mortality costs were included, but it was not possible to determine if these included direct costs (such as palliative care or post-mortem analysis) or indirect costs (such as productivity losses due to early death). All cost parameters and sources from which these were derived from were adequately reported. The authors adequately reported the price year, time horizon, discount rate used and currency details.
Analysis and results:
A previously published model was used to synthesise cost and outcome information. Adequate details of the model structure were provided, although there was no diagram. Although the authors undertook an exhaustive series of one-way and two-way sensitivity analyses to assess the impact of uncertainty, overall model uncertainty (using probabilistic sensitivity analysis) was not undertaken. As main limitations to their study, the authors reported that, unlike most US states, Massachusetts laws require written informed consent for HIV testing. Therefore, costs reported in this study might not be generalisable to other parts of the USA.

Concluding remarks:
The methods used appeared to be good. However, more details of these methods used could have been given. The model and trial on which the analysis was based were published in high impact journals, but this alone did not guarantee quality. The results of the analysis were published in full detail, but given the lack of detail surrounding model inputs, some uncertainty remains. The results appear robust and, given the scope of the analysis, seem reasonable.

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Other publications of related interest


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MeSH
Adult; Antiretroviral Therapy, Highly Active; Clinical Trials as Topic; Cost-Benefit Analysis; Counseling /economics; Emergency Service, Hospital /economics; Female; HIV Infections /diagnosis /economics; Health Personnel /economics; Health Resources /economics /utilization; Humans; Male; Mass Screening /economics; Middle Aged; Models, Biological; Point-of-Care Systems /economics; Sensitivity and Specificity

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