The cost-effectiveness of voluntary counseling and testing of hospital inpatients for HIV infection


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
Voluntary counselling and testing of hospital inpatients for HIV infection.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
US hospital inpatients.

Setting
Hospital. The economic study was carried out in California, USA.

Dates to which data relate
The analysis was modelled on effectiveness data published between 1988 and 1993 and cost data were published between 1987 and 1993. No base year for costings was given.

Source of effectiveness data
Main outcomes were extracted from previously completed studies.

Modelling
Two decision analysis models were used for assessing the cost-effectiveness of HIV testing for detecting HIV inpatient infection and for preventing transmission to health care workers.

Outcomes assessed in the review
The main outcomes were sensitivity and specificity of emergency and non-emergency HIV tests and the probability of transmission of HIV from patient to health care worker.

Study designs and other criteria for inclusion in the review
Not stated.
Sources searched to identify primary studies
Not stated.

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

Methods used to judge relevance and validity, and for extracting data
No details of inclusion criteria etc., were stated.

Number of primary studies included
The number of studies for each category of 'data' varied.

Methods of combining primary studies
Baseline estimates and ranges gathered were calculated for each category of data.

Investigation of differences between primary studies
Not investigated.

Results of the review
The baseline estimates for sensitivity and specificity of non-emergency HIV tests were 0.994 (0.98 - 1.0) and 0.999 (0.98 - 1.0) respectively (range values in parenthesis). Estimates for sensitivity and specificity of emergency HIV tests were 0.999 (0.98 - 1.0) and 0.996 (0.94 - 1.0) respectively (range values in parentheses). The probability of transmission from patient to health care worker was 0.0029 (0.0011 - 0.0064).

Measure of benefits used in the economic analysis
Cases of health care worker HIV infection averted; cases of inpatient HIV detected per year.

Direct costs
Costs and quantities were not reported separately. Only health service costs were considered. Baseline estimates for the cost of the HIV test and the cost of counselling, the costs of treating true and false positive HIV infection for two years and the lifetime cost of treating HIV infected health care worker were mainly taken from previously published studies. A decision tree was used to derive final costs. No discounting was used. No base year was given for costs.

Currency
US dollars ($).

Sensitivity analysis
One way sensitivity analysis was carried out on a variety of factors including specificity of HIV test, cost of treating true positive HIV infection and probability of transmission from patient to health care worker. An analysis of extremes was also carried out on cost per infection detected.

Estimated benefits used in the economic analysis
It was estimated that approximately four HIV infections of health care workers would be averted per year and that given a seroprevalence of 1% (baseline analysis) 168,874 cases of HIV would be detected per year in a population
Cost results
Under the baseline analysis, the net programme costs for 1 year of averting HIV infections to health care workers was $2.7 billion. The net programme cost for testing inpatients to detect HIV infections for 1 year was $2,719 million.

Synthesis of costs and benefits
Under the most favourable scenario the cost per HIV infection averted in health care workers was $183,000 (baseline $753 million and worst case $74 trillion). The cost per HIV infection detected under the baseline assumptions was $16,104. This figure varied from $197 under best case scenario to $1,070,062 under the worst case scenario of a 1 year programme with 10% seroprevalence.

The final results were more sensitive to the level of inpatient HIV seroprevalence assumed than any other input variable.

Authors' conclusions
The analysis reported does not provide any justification for testing hospital inpatients for HIV in order to prevent HIV infection of health care workers. Screening patients to detect HIV may be justified at seroprevalences exceeding 1%.

CRD Commentary
Whilst this study appears to be rigorous in terms of the modelling techniques no details are given except for referencing of the studies on which the model was built. For the costings no base year is provided and no discounting. Making international comparisons from this study in terms of cost per case averted would be difficult. The perspective used to evaluate benefits was too restrictive.

Implications of the study
A more comprehensive analysis is needed.

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National Institute of Mental Health; Agency for Health Care Policy and Research MEDTEP Center; National Institute of Allergy and Infectious Diseases.

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Other publications of related interest

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