Analyse cout-efficacite des strategies de depistage de l'infection par le virus de l'immunodeficience humaine sur les dons de sang en France [A cost-effectiveness analysis of screening strategies for human immunodeficiency virus in donated blood in France]


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
Diagnostic tests suitable for screening strategies for human immunodeficiency virus (HIV) infection in blood donations.

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
Blood donors each year - number estimated between 1995 and 1996.

Setting
The perspective of the study was the blood banks. The economic study was conducted in Bordeaux, France.

Dates to which data relate
The effectiveness data were derived from a review of studies conducted between 1993 and 1996. Cost data used 1996-7 values. However, the price year was not given.

Source of effectiveness data
Effectiveness data were derived from a review of the literature.

Modelling
A decision tree in Data was developed to determine the total cost-effectiveness, which was measured as the number of false negative cases detected.

Outcomes assessed in the review
The outcomes assessed in the review were the seroprevalence of the HIV infection in French blood donors, the prevalence of antigen (Ag) p24 on seronegative blood donors and the characteristics of each of the diagnostic tests as the sensitivity and specificity.

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
Not stated.

Number of primary studies included
Ten primary studies were included in the review.

Methods of combining primary studies
Not undertaken.

Investigation of differences between primary studies
Data were compared with others from published studies to determine intervals of variation.

Results of the review
The seroprevalence of HIV infection in blood donors was 0.24 per 10,000 in 1995 with an interval of variation 0.01-2.00 per 10,000. The estimation of the prevalence of Ag p24 on seronegative blood donors was 27% (20-0.5%). The sensitivity and specificity for each test were as follows: first ELISA test 98% (94-100%) sensitivity and 99.5% (99-100%) specificity; second ELISA test 95% (94-100%) sensitivity and 99.9% (99-100%) specificity; Ag p24 test 70% (40-100%) sensitivity and 99.6% (98-100%) specificity. These data were used as the principal input variables for the model.

Measure of benefits used in the economic analysis
The measure of benefit as determined by the model was the number of false negative blood donations avoided.

Direct costs
Direct costs of screening included the cost of diagnostic tests and the cost due to the loss of blood donations. The method used to calculate each cost parameter was based on the French reimbursement system. Two approaches for cost evaluation were conducted; the first based on the estimation of standard costs, and the second on cost scales. Costs and quantities were reported separately. Discounting was not considered. The price year was not stated.

Statistical analysis of costs
Not undertaken.

Indirect Costs
Not considered.

Currency
French francs (Ffr).
Sensitivity analysis
Sensitivity analyses were based on the intervals of variation for the seroprevalences and the test characteristics, and were conducted on costs with values less than the reimbursement scale.

Estimated benefits used in the economic analysis
The current screening strategy (a first antibody test, followed by two repetitions of the same test if positive and a second antibody test if negative) would detect 70.56 of 72 infectious blood donations. Strategies with two antibody tests would avoid 1.38 additional false negatives. Strategies with combination of antibody and antigen tests would avoid 0.25 additional false negatives.

Cost results
The total cost for screening the blood donors would be: Ffr388 million for the current screening strategy, Ffr765 million for strategies which combined two antibody tests or combined the current screening strategy with one or more antigen tests. The total cost for screening strategies which associated antibody and antigen tests was more than Ffr1 billion.

Synthesis of costs and benefits
The cost per additional false negative avoided was Ffr280 million for screening strategies combining two antibody tests and Ffr555 million for antibody and antigen tests association. The marginal cost per false negative avoided was Ffr1.5 billion for strategies that combined the current strategy with antigen tests. The hierarchy of the screening strategies did not change when sensitivity analyses were conducted.

Authors' conclusions
In the opinion of the authors a change in screening strategies for blood donations in France is not currently justified. If such a change were to be implemented, adding p24 antigen detection to the current screening strategy would be one of the worst solutions.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparator was clear.

Validity of estimate of measure of benefit
Ideally, the number of life years gained in relation to potential treatment of detected patients should have been assessed for each of the screening strategies.

Validity of estimate of costs
Although resource quantities were reported separately from prices, inadequate details of methods of quantity and cost estimation were given.

Other issues
The authors’ conclusions were justified based on the fact that they used a simulation model with relevant sensitivity analysis. However, the absence of threshold values for the incremental cost weakens the generalisability of results.

Implications of the study
The authors' conclusion that a change in screening strategies for blood donations in France is not currently justified may need to be supported by a more inclusive analysis of costs and benefits.
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