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 study examined the clinical/economic impact of a large-scale HIV testing programme – the Expanded HIV-Testing Initiative (EHTI) – for populations affected disproportionately by HIV. The economic evaluation was based on a financial return on investment (ROI) analysis. The authors concluded that the programme averted HIV infections and provided positive ROI compared to usual care. The analysis used a transparent methodology that relied on evidence taken directly from the implementation of the programme. The authors’ conclusions appear valid.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The study examined the clinical and economic impact of a large-scale HIV testing programme: the Expanded HIV-Testing Initiative (EHTI) for populations disproportionately affected by HIV. The current economic evaluation was based on a financial return on investment (ROI) analysis.

Interventions
The objective of the EHTI was to increase HIV testing opportunities for populations disproportionately affected by HIV (primarily people who were ethnically black) and increase the proportion of people with HIV who were aware of their infection and linked to appropriate medical care and prevention services. The programme was implemented in 2007 by the Centers for Disease Control and Prevention (CDC).

The comparator was usual care before implementation of the programme.

Location/setting
USA/primary care.

Methods
Analytical approach:
The analysis was based on a published mathematical model of HIV transmission. It appeared that a lifetime horizon was used. Two perspectives were adopted: that of CDC and partners and that of the larger health care system (such as state and local governments).

Effectiveness data:
Clinical data for the model were mostly taken from the three-year period of programme implementation (2007 through 2009). The primary input of the analysis was the number of people newly infected with HIV who were identified through the programme. The background annual testing level used to calculate the number of infected persons identified in the absence of the programme was based on a previous CDC estimation. Other inputs were taken from published sources not fully described.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
Number of HIV infections averted was the main endpoint of the programme. This was not combined with costs as a cost-consequences analysis was carried out. A 3% annual discount rate was used.
Cost data:
From the perspective of CDC, ROI was calculated as the ratio between averted medical costs associated with HIV transmission prevented and expenditures by CDC and partners. ROI on the health system investment was calculated as programme benefits divided by all programme expenditures including medical costs of treating newly diagnosed index patients through the period of the analysis. These costs were based on data derived from implementation of the programme. Averted medical costs associated with HIV transmission prevented were calculated using published estimates of lifetime HIV treatment costs in USA. Costs were in US dollars ($). The price year was 2009. A 3% annual discount rate was applied.

Analysis of uncertainty:
Various sensitivity analyses were carried out to investigate the robustness of model outcomes to variations of alternative testing intervals of one to five years and smaller differences in transmissions averted by adjusting the base case values downward by 25%, 50% and 75%. A threshold analysis was carried to determine the lowest prevalence rate of undiagnosed HIV infection at which ROI values would be $1 or positive.

Results
Compared to usual care, the three-year programme averted 3,381 HIV infections.

From the perspective of the health system, averted medical costs were $1,169,887,000 and total investment was $599,096,000. The three-year programme resulted in cost-saving with a net benefit of $570,791,000, corresponding to a ROI of $1.95. ROI ranged from $1.46 to $2.01 for the one- to five-year alternative testing intervals. ROI remained above $1 in almost all scenarios and even with a prevalence of undiagnosed HIV infection as low as 0.12%.

From the perspective of CDC and partner investment, total investment was $126,384,000 and the consequent net benefit was $1,043,503,000, corresponding to a ROI of $9.26.

ROI ranged from $3.27 to $14.54 for the one- to five-year alternative testing intervals and remained above $1 in all scenarios with prevalence of undiagnosed HIV infection as low as 0.07%.

Authors’ conclusions
The authors concluded that the programme under examination averted HIV infections and provided positive return on investment compared to usual care.

This study supported implementation of large-scale HIV testing programmes.

CRD commentary
Interventions:
Selection of comparators was appropriate because the authors compared the proposed enhanced model of care for HIV detection to the convention pattern of care.

Effectiveness/benefits:
Clinical data were mostly retrieved from the implementation of the programme, which provided number of cases of HIV avoided. The number of cases avoided without the programme was taken from the CDC database. These sources were representative of the USA context and appeared appropriate given the objective of the study. Key clinical inputs were varied in the sensitivity analysis.

The number of averted HIV cases was disease-specific and did not allow comparisons with other areas. The authors stated that inclusion of survival and quality of life would probably improve the cost-effectiveness of the programme.

Costs:
Two different perspectives were adopted in the study. Types of costs included in each analysis were stated clearly. Costs were presented as macro-categories and not broken down in individual items. Data on unit costs and quantities of resources used were in effect not reported. Resource use and costs for the programme came from real expenditures over the three-year implementation of the EHTI. Costs of averted HIV cases were taken from a USA published study not described. The price year was reported and this enabled reflation exercises in other time periods. It appeared that
cost estimates were not subjected to analysis of uncertainty.

Analysis and results:
The study results were presented clearly for a variety of scenarios. Costs and benefits were not synthesised because of the cost-consequences framework of the analysis. Alternative assumptions for key inputs of the model were appropriately considered in the sensitivity analyses. The authors stated that some conservative assumptions against the programme were made. Study findings were specific to the USA context and did not appear to be directly transferable to other settings.

Concluding remarks:
The analysis used a transparent methodology that relied on evidence taken directly from the implementation of the programme. The authors’ conclusions appear valid.

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