Emergency department HIV screening with rapid tests: a cost comparison of alternative models

Hutchinson AB, Farnham PG, Lyss SB, White DA, Sansom SL, Branson BM

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 examined the cost-effectiveness of three strategies for HIV screening, using an opt-out rapid HIV test, in the emergency department; existing staff, supplemental staff, and a combination of these. The authors concluded that the combined strategy was more cost-effective than either the existing or the supplemental staff strategy. The cost-effectiveness methods were clear, the study was well presented, and the sources were valid. The authors’ conclusions appear to be robust.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the cost-effectiveness of three strategies for HIV screening, using opt-out rapid HIV testing in the emergency department. These were the existing staff, supplemental staff, and a combination of these.

Interventions
The three strategies were the existing staff (nurses) strategy, supplemental staff (health educators) strategy, and a combination strategy. The combination consisted of the most effective method of initiating testing, which was from the existing staff strategy where an emergency department triage nurse initiated testing, and the most effective method of performing testing, which was from the supplemental staff strategy where the health educators conducted testing and disclosed the results.

Location/setting
USA/emergency department.

Methods
Analytical approach:
The analysis was based on a simple decision model with a short time horizon. The authors stated that it was carried out from the perspective of the health care provider.

Effectiveness data:
Most of the clinical data were from two Centers for Disease Control and Prevention (CDC) projects, which collected primary data on point-of-care rapid HIV screening in large urban emergency departments. Both studies mainly included minority, low-income, uninsured patients. They provided information for the supplemental and existing strategies. The data for the combination strategy were mainly assumed by the authors or were selected estimates from the other two strategies. The proportion of visits at which HIV testing was offered and the proportion of patients who accepted and completed the test were the key inputs for the model.

Monetary benefit and utility valuations:
Not considered.

Measure of benefit:
The number of new cases of HIV that were identified was the summary benefit measure.
Cost data:
The economic analysis included the costs of personnel and HIV rapid tests; fixed costs were excluded. The costs and resource quantities for rapid HIV tests were from surveys of US hospitals and CDC data. The cost of personnel was from time-and-motion studies, national wage databases, and primary data. All costs were in US dollars ($) and the price year was 2009.

Analysis of uncertainty:
One-way and threshold analyses were carried out on selected inputs for the model. Alternative values were from other CDC programmes or programmes in other emergency departments, for the existing and supplemental strategies, while authors’ assumptions were used for the combination strategy.

Results
Based on an annual census of 50,000 cases and a 1% HIV seropositivity among patients tested, the total costs were $64,200 with supplemental staff, $101,028 with existing staff, and $229,939 with the combination strategy. The number of HIV infections diagnosed was 19.4 with supplemental staff, 48.5 with existing staff, and 124.3 with the combination strategy.

The incremental cost per new HIV case identified was $1,264 with existing staff over supplemental staff and $1,700 with the combination strategy over existing staff. The average cost per case diagnosed was $3,319 with supplemental staff, $2,084 with existing staff, and $1,850 with the combination strategy.

The base-case results were generally robust to plausible variations in the key inputs.

Authors’ conclusions
The authors concluded that the existing staff strategy identified more HIV cases and was more cost-effective than the supplemental staff strategy, but a combination of these was more cost-effective.

CRD commentary
Interventions:
The comparators were appropriate, as the authors analysed three strategies, which included the real and proposed organisation of HIV testing in the emergency department.

Effectiveness/benefits:
The clinical data were from studies that reported the actual implementation of the screening programmes. These studies included large numbers of consecutive patients from urban hospitals, which should have been representative of the patient population. More information on the methods of these studies was presented in their publications; the authors highlighted the comparability of these studies in their inclusion criteria and other baseline characteristics. The number of cases detected was the natural outcome of the screening programme, but this might be difficult to compare with the benefits of other health care programmes.

Costs:
The cost categories were relevant to the health care payer. The resource use was from the programme implementation and from US hospitals which were representative of the authors’ context and real practice. Other data were from standard US sources. The unit costs and resource quantities were not presented separately, which will make it difficult to reproduce the analysis. The authors stated that opportunity costs of using existing staff to conduct tests instead of other activities, and the downstream costs, such as medical care, were not included, but their inclusion should not change the results. Some important costs were varied in the sensitivity analysis.

Analysis and results:
The results were clearly presented for each model. Both average and incremental cost-effectiveness ratios were calculated. A diagram of the decision model was provided. The uncertainty was partly investigated, using a deterministic approach, which focused on selected inputs. The authors stated that the existing staff strategy had a far higher proportion of patients tested per visit, and the supplemental staff strategy had more patients accept and complete the test. The combined strategy used the most effective features of these two approaches. The results were specific to
the US setting and will be difficult to apply for other settings.

Concluding remarks:
The cost-effectiveness methods were clear, the study was well presented, and the sources were valid. The authors’ conclusions appear to be robust.

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