Treatment outcome and cost-effectiveness of different highly active antiretroviral therapy regimens in the UK (1996-2002)


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 objective was to calculate the cost-effectiveness of different highly active antiretroviral therapy regimens in people infected with human immunodeficiency virus. The authors concluded that, for all three lines of therapy, the regimen containing a non-nucleoside reverse transcriptase inhibitor was cost-effective or cost-saving when compared with the three regimens containing protease inhibitors. A limitation of the analysis was the failure to adjust for uncertainty and therefore some caution may be required when interpreting the authors’ conclusions.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to calculate the cost-effectiveness of different highly active antiretroviral therapy (HAART) regimens for people infected with human immunodeficiency virus (HIV).

Interventions
This study compared first-, second- and third-line HAART regimens containing non-nucleoside reverse transcriptase inhibitors (NNRTIs) with those containing protease inhibitors (PIs). The four HAART regimens consisted of two nucleoside reverse transcriptase inhibitors (NRTIs) combined with one NNRTI, one PI, one boosted PI, or two PIs.

Location/setting
UK/secondary care.

Methods
Analytical approach:
This economic evaluation was based on data derived from a single source, which was the National Prospective Monitoring System on the Use, Cost and Outcome of HIV service provision in UK Hospitals - the HIV Health-economics Collaboration (NPMS-HHC). The time horizon of the study was seven years and the authors stated that a public service perspective was adopted.

Effectiveness data:
The clinical data were derived from nine hospitals participating in the NPMS-HHC project. There were 3,647 patients starting first-line HAART (mean age: 36.8 years), 1,037 patients starting second-line HAART (mean age: 37.2 years), and 720 patients starting third-line HAART (mean age: 37.8 years). Of those starting first-line HAART, 51% started on the NNRTI combination, 26% on the PI combination, 4% on the two PIs combination, and the remaining 15% on other combinations. Adjustments were made for the confounding factors of gender, age and baseline health status. The key clinical outcome was the median time to treatment failure.

Monetary benefit and utility valuations:
None.

Measure of benefit:
The primary measure of benefit was life-years gained (LYG).
Cost data:
The cost categories were the costs of drugs, tests and procedures, and the use of in-patient, out-patient and day ward services. The resource use was obtained from the computerised information systems of the nine hospitals participating in the study and the prices of the various services were obtained from a published UK study. The price year was 2002 and costs were discounted at a rate of 3.5% per annum. All costs were originally in UK pounds sterling (£) but were converted to US dollars ($) using a conversion rate of £1 equals $1.50.

Analysis of uncertainty:
The authors did not conduct any analysis of uncertainty.

Results
For first-line HAART, the median time to treatment failure for the NNRTI combination (13.2 years) was substantially longer than that for the boosted PI combination (4.5 years), the PI combination (4.3 years), and the two PIs combination (6.5 years). For second- and third-line HAART, the median time to failure was similar across all four regimens.

For first-line HAART, the cost per LYG for the NNRTI combination was $12,375 when compared with the boosted PI combination, $12,139 when compared with the PI combination, and $2,948 when compared with the two PIs combination.

For second-line HAART, the cost per LYG for the NNRTI combination was $19,501 when compared with the boosted PI combination, $18,364 when compared with the PI combination, and cost saving when compared with the two PIs combination.

For third-line HAART, the cost per LYG for the NNRTI combination was $2,708 when compared with the boosted PI combination, $11,559 when compared with the PI combination, and cost-saving when compared with the two PIs combination.

Authors' conclusions
The authors concluded that, for all three lines of therapy, the HAART regimen containing a NNRTI, with two NRTIs, was cost-effective or cost-saving compared with the three regimens containing PIs.

CRD commentary
Interventions:
The interventions appeared to be appropriate, in that they represented the current practice in the authors' setting, and they were relatively well reported.

Effectiveness/benefits:
The effectiveness data were derived from a database designed to monitor the effectiveness, efficiency, equity and acceptability of treatment and care in participating HIV clinics. The clinical end points therefore reflected a real world setting. Overall, the effectiveness data were well reported. The median time to treatment failure was appropriate as the clinical end point, given the aim of the study. Life-years gained was also an appropriate outcome. These were not discounted because the authors claimed that discounting was controversial, but analyses with and without discounting could have been performed.

Costs:
The categories of costs were consistent with the perspective, but statistical analyses of these costs were not performed. They were converted from £ to $, but no adjustment was made for the differences in purchasing power parity between the two countries. The price year was reported and the costs were appropriately discounted.

Analysis and results:
The synthesis of costs and benefits was appropriately performed and reported, but the uncertainty in the cost-effectiveness results was not investigated. The authors noted that a potential limitation of their analysis was that it was based on observational data and could not therefore be adjusted for unknown confounders, although adjustments were
made for known confounders.

Concluding remarks:
A limitation of the analysis was the failure to adjust for uncertainty and therefore some caution may be required when interpreting the authors’ conclusions.

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