The cost-effectiveness of antiretroviral therapy for treating HIV disease in the Caribbean


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 of the study was to examine the cost-effectiveness of antiretroviral therapy (ART) for treating human immunodeficiency virus (HIV) disease in a hypothetical cohort of HIV-infected adults. The authors concluded that in the Organization of European Caribbean States, ART is cost-effective by international standards. On the whole, the methodology of the study seemed appropriate and was clearly reported. The authors’ conclusions appear appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective of the study was to examine the cost-effectiveness of antiretroviral therapy (ART) for treating human immunodeficiency virus (HIV) disease in a hypothetical cohort of HIV-infected adults that had a mean age of 36 years and gender distribution of 58% male.

Interventions
Four treatment strategies were examined:

no treatment;

treatment with cotrimoxazole prophylaxis alone when the CD4 count was <200 cells/μL;

treatment with ART alone when the CD4 count was <350 cells/μL; and

treatment with ART (CD4 count <350 cells/μL) plus cotrimoxazole (CD4 count <200 cells/μL).

Location/setting
Caribbean/secondary care.

Methods
Analytical approach:
A state-transition model of HIV disease (an adaptation of the cost-effectiveness of preventing AIDS complications US model) was used to facilitate the synthesis of the cost and clinical data. A lifetime horizon was used. The authors stated that the study perspective was that of society.

Effectiveness data:
The effectiveness data were taken from a wide range of sources including the Jamaican Ministry of Health HIV/AIDS Tracking System and the US Multicenter AIDS Cohort Study, as well as published literature. The authors did not report any search methods or inclusion criteria for the studies providing effectiveness data. The main clinical parameters were drug efficacy, the monthly probability of complications from opportunistic disease, and death.

Monetary benefit and utility valuations:
None.

Measure of benefit:
The measure of benefit was the number of life-years saved.

Cost data:
The cost categories included medications, inpatient and outpatient care and tests. The costs for ART and cotrimoxazole were taken from the regional Organisation of the Eastern Caribbean States (OECS) pharmaceutical procurement service, while the costs of inpatient and outpatient care were calculated from data taken from the World Health Organization's study on choosing interventions that are cost-effective. The use of inpatient and outpatient HIV medical care related to the USA and was taken from the HIV Research Network study. The costs were converted into 2006 US dollars ($) using a country-specific gross domestic product deflator and the fixed exchange rate between the Eastern Caribbean dollar and the US dollar. A discount rate of 3% was applied to the costs.

Analysis of uncertainty:
A sensitivity analysis was performed on some of the clinical and cost data. The authors did not report the type of sensitivity analysis conducted, but it appears to have been a one-way analysis. The results of the sensitivity analysis were shown as upper and lower limits around the incremental cost-effectiveness ratio.

Results
The mean life expectancy with no treatment was 2.3 years at a lifetime cost of $1,600 per person.

Treatment using one line of ART resulted in a mean life expectancy of 8.04 years at a cost of $5,520, giving an incremental cost-effectiveness ratio (ICER) of $690 per year of life saved compared with the option of no treatment.

Treatment using one line of ART with cotrimoxazole produced a mean life expectancy of 8.16 years at a cost of $5,620, giving an ICER of $830 per year of life saved.

Finally, treatment with two lines of ART with cotrimoxazole increased mean life expectancy to 9.20 years at a cost of $17,020 per person, giving an ICER of $10,960 per life year saved.

The cost of second-line ART and the strategies used to switch between therapies had the greatest impact on cost-effectiveness. For example, the ICER of treatment with two lines of ART decreased from $10,960 to $3,530 if the monthly cost of second-line ART decreased to the international cost.

Authors’ conclusions
The authors concluded that in the OECS, ART is cost-effective by international standards.

CRD commentary
Interventions:
The interventions were well described and represented current practice in the study setting.

Effectiveness/benefits:
The effectiveness data were derived from a wide range of sources. The methods used to review the literature were not reported, which makes it impossible to determine if the best available evidence was used for the model. The authors reported that the best available clinical and effectiveness data from Jamaica were used for the estimates of survival, but it was not clear why these particular estimates were considered the best. The outcome used was the number of life-years saved which, while appropriate, could have been extended to include quality of life.

Costs:
The authors reported that a modified societal perspective was used. However, given the cost categories included (drug and hospital costs), the perspective could have been more accurately described as that of the health care system. Mean costs for inpatient and outpatient visits were reported, along with the expected number of visit. However, drug costs were reported as monthly costs rather than as separate unit costs and quantities. Information on the quantity of inpatient and outpatient visits was not available for the countries under consideration, so US data were used and subjected to extensive sensitivity analysis.
Analysis and results:
The authors conducted an appropriate incremental analysis and full results were presented. The methods used throughout the economic evaluation were well reported, although a list of the variables subjected to sensitivity analysis and the range of values used would have been helpful. The authors acknowledged the main limitations of their analysis.

Concluding remarks:
On the whole, the methodology of the study seemed appropriate and was clearly reported. The authors' conclusions appear appropriate.

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