Background

Because of the high profile nature of human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS), most developed countries reimburse and provide pricing flexibility for antiretroviral (ARV) therapies.

Over the next decade, it is anticipated that up to 8 new nucleoside reverse transcriptase inhibitors (NRTIs), 6 non-nucleoside reverse transcriptase inhibitors (NNRTIs), 5 protease inhibitors (PIs), and 2-3 entryfusin inhibitors may become available to patients with HIV/AIDS.

Pharmacoeconomic evaluations may be required to demonstrate the value of the newer ARVs relative to the older, presumably less expensive agents. At this point, it is useful to provide a framework for examining the newly marketed ARVs by evaluating the currently published head-to-head economic evaluations of ARV therapies.

Objectives

The objectives of this analysis were to:

1. Systematically review published economic modeling studies that directly compare specific ARV drug treatment strategies.
2. Analyze the differences between the existing ARV therapy models.

Methods

A systematic literature synthesis was conducted of economic modeling studies published since the introduction of highly active antiretroviral therapies (HAART).

The initial search was conducted using MEDLINE to identify articles published between 1995 and 2002, using the keywords AIDS, HIV, ARV, modeling, and costs.

Two researchers independently reviewed the abstracts retrieved from MEDLINE.

The electronic search was augmented by manual searches of the retrieved articles and by searching other relevant databases.

The initial search returned 937 articles. After removing duplicates and assessing the abstracts, 462 articles remained.

The full text of these 462 articles was retrieved and the abstracts reviewed for inclusion. The final list consisted of 56 articles.

Results

Table 1: Sources of Input Variables for Models

<table>
<thead>
<tr>
<th>Year of Publication</th>
<th>Ref.</th>
<th>Model Type</th>
<th>Model Approach</th>
<th>Timeframe</th>
<th>Cost Components</th>
<th>Cost-Effectiveness Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Lacey</td>
<td>Clinical Trial + Database Analysis + Published Literature</td>
<td>Base Case Model</td>
<td>1 year</td>
<td>ARV Utilization, Physician Fees, Inpatient, Outpatient</td>
<td>SA, base case, Markov</td>
</tr>
<tr>
<td>2000</td>
<td>Richter</td>
<td>Database Analysis + Published Literature</td>
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</tr>
</tbody>
</table>


different studies compared specific ARV treatment regimens as acknowledged as being sponsored by a pharmaceutical company.

Different ARV therapies were assessed in different studies (Figure 2).

Twelve clinical and economic endpoints were identified in the literature (Table 4).

Conclusions

Economic models comparing specific ARV therapies only represent ~25% of the published modeling studies in HIV/AIDS.

To date, there has been widespread reimbursement of HAART, which may explain this relative small number of head-to-head economic modeling studies.

Although ARV therapies have been broadly reimbursed, as more treatment options become available, payers may increasingly require direct economic comparisons of specific ARV drug treatment strategies.

While evaluation of these economic models demonstrated a number of differences, several key trends emerged:

- Single models are being adapted to other countries, as well as to a variety of decision makers/perspectives within a target country.
- Short-term economic models are gaining popularity worldwide and are targeting formulary decision makers in an effort to differentiate a specific product used in a treatment strategy.

Communicating the model results to clinical audiences appears to be an important priority when selecting target journals.

It is likely that the use of economic modeling for specific ARV therapies will continue to grow and become a critical feature of a broad formulary acceptance strategy as new agents become available within each therapeutic class.

References