METHODOLOGICAL QUALITY OF BUDGET IMPACT ANALYSES FOR ORPHAN DRUGS: AN UPDATED REVIEW*

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BACKGROUND AND OBJECTIVES

Orphan drug spending surpassing total pharmaceutical expenditure trends is increasingly pressurizing limited health care resources globally. Budget impact analysis offers health authorities a way to predict fiscal feasibility and sustainability of adopting a new orphan drug within their jurisdiction. However, budget impact analyses of orphan drugs in reimbursement procedures lack transparency.

This study aims to (1) update on the evaluation of the methodological quality of budget impact analyses for orphan drugs with (2) suggestions for future enhancements of accuracy and reliability.

METHODS

- Conference abstracts and peer-reviewed articles retrieved from Pubmed and Embase up to January 2020
- ISPOR good practice guidelines on budget impact analyses for quality assessment of following parameters:
  - perspective
  - target population
  - time horizon
  - intervention and comparator(s)
  - assumptions and sensitivity analysis

RESULTS

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Target population</th>
<th>Time horizon</th>
<th>Scope of costs</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of</td>
<td></td>
<td>Of</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>budget holder (89%): 79% third-party payer 10% hospital, pharmacy, patient society: 1%</td>
<td>1 to 5 years: 87%</td>
<td>other setting 40%</td>
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<tr>
<td></td>
<td>only 4% with more than one perspective</td>
<td>&gt;5 years: 13%</td>
<td>claims database 41%</td>
<td></td>
</tr>
<tr>
<td>Intervention and comparator(s)</td>
<td>sources: assumptions 41%, claims database 8%</td>
<td>Budget impact results depicted as</td>
<td>registries 44%</td>
<td>other setting 40%</td>
</tr>
<tr>
<td></td>
<td>Market uptake of intervention expansion 54% substitution 18% combination 9% one or more comparators: 90%</td>
<td>periods (monthly/annually): 87%</td>
<td>companies 36%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sources: company 24%, registries 16%</td>
<td>one net value: 12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discounting</td>
<td>Budget calculations not discounted: 95% discounted: 5%</td>
<td></td>
<td>registries 44%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sources: assumptions 1%, public literature 1%</td>
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Assumptions and sensitivity analysis

All studies require assumptions with most on population size: 65% other drug-related 38% market uptake 48% and sensitivity analyses deterministic univariate 37% probabilistic 1% not reported or unclear: 62%

Validation

Budget impact framework not validated: 88% validated: 22% (through experts, data sources, similar studies or statistical analyses)

DISCUSSION

Adherence percentages of studies (n=91) to ISPOR criteria on budget impact analyses for individual (77%) and combination (23%) of orphan drugs.¹

RECOMMENDATIONS

Improving future budget impact analyses of orphan drugs by:
- Adopting one or more perspective(s) and motivating their choice(s).
- Adequately comparing intervention with and without alternative.
- Accounting for influx and efflux of patients within a dynamic population.
- Consistently considering both drug-costs and condition-related costs.
- Determining uncertainty of assumptions by exhaustive sensitivity analyses.
- Validating the framework by external experts, statisticians and/or former studies.
- Systematically collecting and publishing required data for such analyses.

CONCLUSION

Existing budget impact analyses for orphan drugs are concise, vary greatly and of substandard methodological quality.

To eliminate concerns on bias of such analyses, future studies should adhere to standardized methodologies of systematic guidelines (i.e. national or ISPOR guidelines).

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