

Cost-consequences analysis - an underused method of economic evaluation

The cornerstone of a good health economic evaluation is collecting information on the costs and consequences of a new health care technology or policy and its comparator(s). It is generally considered best practice to design a cost cost-utility analysis (CUA), a single summary ratio which provides information on the incremental cost per quality adjusted life year (QALY) gained of a new technology compared to current best practice. A CUA is generally recommended due to the definitive methodology for calculating QALYs, hence facilitating the comparison of results across programmes of work (Drummond, Sculpher et al. 2005). A CUA though is not always possible or practical, particularly when information about morbidity, such as a quality of life questionnaire like the EuroQol 5-D, is not available to be able to calculate QALYs, as is the case with routinely collected patient data.

Cost-consequences analysis (CCA) is a form of economic evaluation where disaggregated costs and a range of outcomes are presented to allow readers to form their own opinion on relevance and relative importance to their decision making context (Drummond, Sculpher et al. 2005). This is usually done using a descriptive table to present the effectiveness results (primary and secondary outcomes) in a disaggregated format, together with the estimates of the mean costs with appropriate measures of dispersion associated with each intervention (see example 1).

CCAs have been recommended for complex interventions that have multiple effects for example lifestyle education in diabetes (Drummond, Sculpher et al. 2005), and public health interventions which have an array of health and non-health benefits that are difficult to measured in a common unit ([NICE 2013](#)). CCAs are not restricted to any viewpoint and so readers and decision makers can see the impact of their decisions on patient costs or on other sectors such as criminal justice (Brazier, Ratcliffe et al. 2007). Similarly, outcomes are not restricted to health outcomes such as QALYs and can include other measures of wellbeing such as patient, or indeed staff, satisfaction. These non-health considerations are becoming increasingly relevant to NHS decision makers. CCA may be of particularly value to funders that are more concerned with patient-orientated outcomes and intervention costs such as Charities and some NIHR research programmes, particularly those with less focus on final stage randomised control trials.

CCAs may also be particularly useful in feasibility or pilot studies when it is not clear which costs and outcomes will be most relevant to future definitive trials. Given the limited funding available for feasibility studies and the scarcity of health economists, CCA can provide a less resource intensive alternative if interventions have important economic consequences or a full comparative analysis is premature, but still provide an opportunity to pilot instruments used to collect economic data such as resource use and health-related quality of life.

Example 1: Cost consequences analysis: Example of summary costs and effects

| | Intervention 1 | Intervention 2 | Difference |
|----------------------|----------------|----------------|---------------|
| Costs | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| Cost of intervention | £ (£, £) | £ (£, £) | £ (£, £) |

| | | | |
|---------------------------|---------------|---------------|---------------|
| NHS secondary care | £ (£, £) | £ (£, £) | £ (£, £) |
| NHS primary care | £ (£, £) | £ (£, £) | £ (£, £) |
| Informal care | £ (£, £) | £ (£, £) | £ (£, £) |
| Social care | £ (£, £) | £ (£, £) | £ (£, £) |
| Costs to patient | £ (£, £) | £ (£, £) | £ (£, £) |
| Welfare payments | £ (£, £) | £ (£, £) | £ (£, £) |
| Criminal justice costs | £ (£, £) | £ (£, £) | £ (£, £) |
| Cost of productivity loss | £ (£, £) | £ (£, £) | £ (£, £) |
| | | | |
| Outcomes | | | |
| Primary clinical outcome | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| Secondary outcomes | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| QALYs using EQ-5D-5L | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| QALYs using SF-6D | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| Quality of life | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |
| Patient satisfaction | Mean (95% CI) | Mean (95% CI) | Mean (95% CI) |

Example 2: Advantages and disadvantages of a CCA

| Disadvantages of a CCA | Advantages of a CCA |
|---|--|
| No specific or definitive guidance on cost-effectiveness thresholds | Easily understood and applied by decision makers |
| Limited generalisability | Able to present a broader range of health and non-health costs |

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|---|--|
| | and benefits |
| Decisions based on CCA may not be transparent or run the risk of cherry picking positive results. | Alternative approaches to measuring costs and outcomes |

The CCA approach helps to refine economic methods, identify relevant costs and outcomes and generate hypotheses for definitive cost-effectiveness studies and perhaps most importantly, provides a broader and richer source of economic information increasingly needed by NHS decision makers. It provides a straightforward way to present cost and outcome data alongside each other for a new health technology and its comparator(s) in situations where complexity in the research design might otherwise be pervasive. An example would be comparing the costs and consequences of different models of care across a care pathway in an observational study. Given the methodological issues associated with this design, an initial CCA can provide initial information on where further focus might be beneficial.

References

- Brazier, J., J. Ratcliffe, J. Salomon and A. Tsuchiya (2007). *Measuring and Valuing Health Benefits for Economic Evaluation*. Oxford, Oxford University Press.
- Drummond, M., M. Sculpher, G. Torrance, B. O'Brien and G. Stoddart (2005). *Methods for the Economic Evaluation of Health Care Programmes*. Oxford, Oxford University Press.

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