

Title	Review of Guidelines for Good Practice in Decision-
	analytic Modeling in Health Technology Assessment
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## Aim

To identify existing guidelines and develop a synthesized guideline plus accompanying checklist, and to provide guidance on key theoretical, methodological, and practical issues and consider the implications of this research for what might be expected of future decision-analytic models.

## Conclusions and results

Fifteen studies met the inclusion criteria and were reviewed and consolidated into a single set of brief statements of good practice. From this, a checklist was developed and applied to 3 independent decision-analytic models. The checklist provided guidance on key issues for model evaluation, but was too general to show the specific nuances of each model. Searches helped identify important data for inclusion in the model, but the quality of life searches were problematic, eg, the published search filters did not focus on those measures specific to cost-effectiveness analysis. Of the 11 studies meeting the criteria on the effect of selection bias, 5 concluded that a nonrandomized trial design is associated with bias and 6 studies found similar estimates of treatment effects from observational studies or nonrandomized clinical trials and randomized controlled trials (RCTs). One purpose of developing the synthesized guideline and checklist was to provide a framework for critical appraisal by the various parties assessing health technology (eg, the guideline and checklist can be used by groups that review other analysts' models, and by analysts to develop their models). The Expert Advisory Group (EAG) felt that the guidance and checklist would be useful, although the checklist should not be used as a substitute for critical appraisal in determining the quality of a model.

## Recommendations

The review of current guidelines showed that although authors may provide a consistent message on some aspects of modeling, in other areas conflicting attributes are presented in different guidelines. Generally, the checklist appears to identify aspects of the model that should be of particular concern to the reader, but cannot identify the appropriateness of the model structure and structural assumptions. This is a general problem with generic checklists and does not reflect any shortcoming with the synthesized guidance and checklist developed here. The assessment of the checklist, and feedback from the EAG, indicated the importance of its use in conjunction with a more general checklist or guidelines on economic evaluation.

## Methods

A systematic review of good practice guidelines aimed to identify and summarize the guidelines available to assess the quality of decision-analytic models used in health technology assessment. A synthesized good practice guidance and checklist were developed. Two topics in decision-modeling were considered, ie, identification of parameter estimates from published literature, and bias in parameter estimates. A systematic literature review identified studies concerning quantification of bias in parameter estimates and the implication of this bias.

# Further research/reviews required

Research in the following areas would be valuable: the quantification of selection bias in noncontrolled studies and in controlled observational studies; the level of bias in the different non-RCT study designs; a comparison of results from RCTs with those from other nonrandomized studies; assessment of the strengths and weaknesses of alternative ways to adjust for bias in a decision model; and how to prioritize searching for parameter estimates.