

Appendix 8

Checklist for assessing the quality of health economic modelling studies

REVISION 2018

The SBU checklist for health economic modelling studies is based on previous checklists [1–4] but has been revised and complemented to suit the SBU work. For assessment of the quality of the empirical data used in the model, see Cooper et al [5].

Few health economic analyses meet all the checklist requirements. Studies that fail to meet requirements are of course still useful for some purposes. However, the deficiencies should be born in mind when interpreting the results. The overall assessment of study transferability and quality is summarised below, after the respective checklist items have been assessed.

Reviewer, date: _____

Author: _____ Year: _____ Article number: _____

	High	Moderate	Low	Insufficient	Comments
Assessment of the transferability of the study's economic results (Section 2):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Assessment of the study quality with respect to economic aspects (Sections 3 and 4):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Assessment of the study quality with respect to the effects and side effects of the intervention (assessed by the project experts):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1. Study relevance (PICO) in relation to the project research questions	Yes	No	Unclear	Not applicable	Comments
For the study to be included, these questions must be answered by "yes"					
a) Is the study population relevant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is the intervention relevant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Is the comparator relevant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Is the outcome measure relevant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Transferability of the study's economic results	Yes	No	Unclear	Not applicable	Comments
a) Are both costs and effects studied (or are the effects assumed to be equal)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is the intervention implemented in a sector or by an organisation (e.g. hospital care or a local social service office) that is relevant to the current Swedish context?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Are the unit costs used in the study relevant to the current Swedish context? ¹	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Do the extent and type of care or intervention delivered to study participants correspond to what patients/users receive in the current Swedish context?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Does the study have a societal perspective?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Potential conflicts of interest	Yes	No	Unclear	Not applicable	Comments
a) Is there a low risk that the conflicts of interest declared by the authors may have influenced the study results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is there a low risk that a sponsor with an economic interest in the outcome may have influenced the study results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Is there a low risk of conflict of interest from other sources (e.g. the authors have developed the intervention)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Quality of the economic analysis	Yes	No	Unclear	Not applicable	Comments
4.1 Choice of analysis					
a) Is the type of economic analysis justified in relation to the research questions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.2 Model structure					
a) Is the model structure appropriate for the specific research question and the specific health condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is the model structure, including the underlying assumptions, transparent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Is the external validity of the model explored? ²	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Is the time horizon sufficient to reflect all important differences in costs and effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Markov models: Is the model cycle length motivated by the research question?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Continued	Yes	No	Unclear	Not applicable	Comments
4.3 Costs and effects					
a) Have all relevant outcomes been identified (including side effects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is the data on treatment effects taken from the best possible sources? ³	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Is the difference in treatment effects, which determines the model outcomes, statistically significant?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Are appropriate methods used to extrapolate treatment effects over the chosen time horizon? ⁴	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e) Has the study considered compliance? ⁵	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Are the quality-of-life weights from the best possible sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Given the perspective of the analysis, have all relevant costs been identified (including those due to side effects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
h) Is the data on resource use (e.g. number of social worker visits, number of hospital care days) from the best possible sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Are the unit costs taken from the best possible sources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.4 Interpretation of results					
a) Was an incremental analysis of both costs and outcomes conducted (or is it possible to calculate)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Are appropriate statistical methods used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Are the conclusions consistent with the reported results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.5 Sensitivity analysis					
a) Are all important variables explored in sensitivity analyses? ⁶	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Is the uncertainty in the result explored using probabilistic sensitivity analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Is the result insensitive to changes in examined variables? ⁷	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4.6 Discounting (for studies with a time horizon exceeding 1 year) ⁸					
a) Are costs discounted appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Are outcomes discounted appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- ¹ Provided that they, if necessary, are converted to Swedish krona [SEK], and adjusted to the current price year according to purchasing power parity (PPP). The following cost converter is used: <http://eppi.ioe.ac.uk/costconversion/default.aspx>
- ² External validity involves comparing the outcomes of the model with those from other models or empirical studies. It may also involve having the model peer reviewed. A mere comparison of the study's incremental cost-effectiveness ratio (ICER) with that of other studies is not sufficient for a "yes" answer.
- ³ Are there other studies or studies of better quality that contain data on the effects of the intervention that should have been included in the analysis? If there are several high quality studies, are the results synthesized in a meta-analysis?
- ⁴ Are assumptions regarding a sustained treatment effect after the follow-up period clearly presented and discussed?
- ⁵ Has the study considered compliance, possibly supplemented with information on whether analyses were performed according to intention-to-treat (ITT)? Do patients/users and care providers employ the intervention as intended (e.g. the number of sessions in a treatment programme)?
- ⁶ Concerns variables containing uncertainty that may influence the results of the analysis. If extrapolations are made from empirical data, it may be important to explore different methods of extrapolating.
- ⁷ Concerns the robustness of the results, i.e. that the sensitivity analyses do not alter the overall conclusions about cost-effectiveness (regarding both one-way and probabilistic sensitivity analysis).
- ⁸ Is the selected approach justified? Different countries have different recommendations. Future costs should be discounted (but the discount rate may vary). For future outcomes, there are arguments both for and against discounting. In Sweden, the Dental and Pharmaceutical Benefits Agency recommends a discount rate of 3% for both costs and effects, but also requires sensitivity analyses with rates of 0 and 5%.

References

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2. Drummond MF, Sculpher MJ, Torrance GW, O'Brien BJ, Stoddart GL. Methods for the economic evaluation of health care programmes, 3rd edition. Oxford: Oxford University Press, 2005.
3. Evers S, Gossen M, de Vet H, van Tulder M, Ament A. Criteria list for assessment of methodological quality of economic evaluations: Consensus on health economic criteria. *Int J Technol Assess Health Care* 2005; 21(2):240-5.
4. Philips Z, Ginnelly L, Sculpher M, Claxton K, Golder S, Riemsma R, et al. Review of guidelines for good practice in decision-analytic modeling in health technology assessment. *Health Technol Assess* 2004;8(36):1-72.
5. Cooper N, Coyle D, Abrams K, Mugford M, Sutton A. Use of evidence in decision models: an appraisal of health technology assessments in the UK since 1997. *J Health Serv Res Policy* 2005;10(4):245-50.