

Supplementary Document for Economic Evaluation in Opioid Modeling: Systematic Review

Extraction Items:

1. **Perspective:** the point of view adopted for purposes of the economic evaluation, which may be from one or more perspectives, e.g., societal, health care sector, payer, or patient. Various stakeholders may care about different costs and effects at play for a given set of strategies. The perspective depends on the research question and which costs and effectiveness measures the analysis takes into account.
2. **Intervention and comparator:** The strategy that is the focus of analysis. In most cases, the cost-effectiveness result is usually reported in terms of the intervention of interest relative to the comparator. The comparator is the strategy to which the intervention of interest is being compared. When a pair of interventions are being compared against one other rather than a novel or expanded version of the intervention being compared to no intervention or the status quo, the assignments for the intervention of interest and comparator categories may be interchangeable. In the case of a wide set of multiple strategies, the intervention of interest and comparator items indicate that multiple strategies are being compared relative to one another.
3. **Simulated population:** the age, gender, substance use behavior or other characteristics of the individuals represented in the model underlying the economic evaluation
4. **Treatment setting:** the main setting in which the intervention(s) included in the model underlying the economic evaluation are administered.
5. **Country/geographical focus and currency:** the country or geographical region in which the model underlying the economic evaluation is based. In some cases, the model may be originally built on a general basis and then is tailored, or the cost components are selected so that the cost analysis applies to a particular geography. The currency and year of currency is reported. Most economic evaluations note explicitly the year to which the flow of costs is adjusted, and this detail is stated in parentheses in Table 1. If the adjustment year for the cost estimates is not given, the year of the paper's publication is noted with an asterisk to give at least some time-based context for the cost estimates.
6. **Cost source:** the primary source of cost data used in the economic evaluation
7. **Industry funding:** Binary indicator for whether funding was directly declared in the full-text version of the article. If the study was funded by industry, the specific source is listed in parentheses.
8. **Modeling approach:** the type of simulation approach upon which the cost analysis is based
9. **Economic evaluation method:** the basic framework for cost analysis, e.g., cost-utility analysis, cost-effectiveness analysis, budget impact analysis
10. **Sensitivity analysis:** whether the analysis tests how the results are sensitive to the selection of a range of possible input parameters and if the sensitivity analysis was limited to a deterministic analysis or if a probabilistic sensitivity analysis was performed.
11. **Time horizon:** the time horizon for the model underlying the economic evaluation, as explicitly stated in the study text; if not specified directly then the time horizon is inferred and reported based on the description of the model
12. **Discounting:** whether discounting was applied to cost and effectiveness measurements, e.g., QALYs, and if yes, the rate is noted as well as whether it was applied to cost only, effectiveness only, or both cost and effectiveness measurements
13. **Cost estimation:** a summary-level description for the difference in cost between strategies; this is also interpreted as the incremental cost between alternatives or what is represented in the ICER's numerator if the economic evaluation is a cost-effectiveness or cost-utility analysis along with a description of cost inputs which are accounted for in the analysis. Input costs are mentioned for the purpose of given context to what is driving differences in total costs between treatment or strategy alternatives. This item is not intended to approach an exhaustive list of cost inputs
14. **Effectiveness estimation:** a summary-level description of units of measurement for effectiveness of the intervention or strategy alternatives, along with a brief indication of the factors that appear to be driving differences in overall effectiveness between treatment or strategy alternatives. This extraction item is not intended to encompass all intricacies of differences in effectiveness exhaustively but rather give a top-level mention of factors likely driving any differences in effectiveness findings
15. **Result:** the incremental cost-effectiveness ratio (ICER) or range of ICERs in the case of cost-utility or cost-effectiveness analysis, or the main cost-related finding for other types of economic evaluations
16. **Most sensitive parameter:** if the analysis identifies an input parameter or set of parameters upon which the cost-related finding is most sensitive, those parameters are mentioned in this extraction item.
17. **Authors' conclusion:** the conclusion of the economic evaluation as reported by the authors. Rather than returning to the quantitative results and arriving at any inferred conclusion, this extraction item reports objectively the conclusion as stated by the original authors of the economic evaluation.

Table S1: Quality assessment

Study	Research question well defined?	Comprehensive description of alternatives?	Effectiveness of program established?	Important & relevant costs & consequences for each alternative identified?	Costs & consequences measured accurately & appropriately?	Costs & consequences valued credibly?	Costs & consequences adjusted for differential timing?	Incremental analysis of costs & consequences performed?	Allowance made for uncertainty in estimates?	Presentation & discussion of study results include all issues of concern to users?
Asche 2015 ²⁸	Y	Y	Y	Y	Y	Y	P	N	Y	Y
Barnett 1999 ²⁹	Y	Y	Y	N	N	N	Y	Y	Y	Y
Barnett 2001 ³⁰	Y	Y	P	P	Y	P	Y	Y	Y	P
Carter 2017 ³¹	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Chalmers 2012 ³²	Y	Y	Y	Y	N	Y	P	N	Y	P
Cipriano 2018 ⁴⁴	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coffin 2013 (1) ⁴⁵	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coffin 2013 (2) ⁴⁶	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Jackson 2015 ³³	Y	Y	Y	Y	P	P	Y	Y	Y	Y
King 2016 ³⁴	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Krebs 2018 ³⁵	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Langham 2018 ⁴⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Masson 2004 ³⁶	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Morozova 2019 ³⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Nosyk 2012 ³⁸	Y	Y	Y	Y	Y	Y	P	Y	Y	Y
Ritter 2016 ³⁹	Y	Y	Y	N	Y	P	P	P	N	P
Schackman 2012 ⁴⁰	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Townsend 2019 ⁴⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Uyei 2017 ⁴⁹	Y	Y	Y	Y	Y	Y	P	Y	Y	Y
Yenikomshian 2017 ²⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Zaric 2000 (1) ⁴¹	Y	Y	Y	P	P	P	Y	Y	Y	P
Zaric 2000 (2) ⁴²	Y	Y	Y	P	Y	Y	Y	Y	Y	Y
Zarkin 2005 ⁴³	Y	P	Y	Y	P	P	Y	P	Y	Y

Y: Yes; N: No; P: Partial

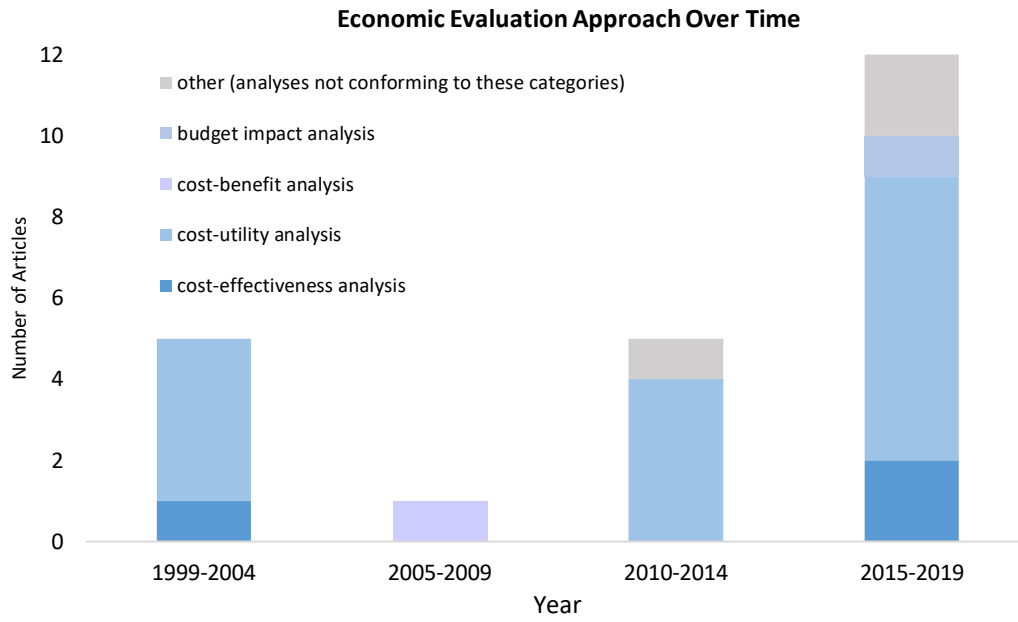


Figure S1: Distribution of the economic evaluation approaches over time