Targeted literature review of nonpayer costing in societal-perspective oncology cost-effectiveness models

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Background

- Societal perspective in health economic modeling differs from the conventional payer perspective in its inclusion of nonpayer costs that are relevant to the greater societal system
- Adoption of the societal perspective in economic evaluations of healthcare technologies has been encouraged by health economists and health technology assessment (HTA) bodies
  - The Second Panel on Cost-Effectiveness in Health and Medicine recommends including two reference case analyses, from both a healthcare sector and a societal perspective[1]
    - To guide in clarifying the scope of the two reference cases, the Panel recommends implementing an "impact inventory," a structured table containing consequences both inside and outside the formal healthcare sector
  - According to a recent HTA guideline review, 65% of HTA guidelines explicitly consider the societal perspective
    - Societal perspective is defined in 73% of the guidelines of well-established agencies and 56% of those of newly developed agencies[2]
- Despite published guidelines and recommendations, the methods for incorporating societal costs and the types of nonpayer costs included in cost-effectiveness analyses (CEAs) may vary widely[3]

Objective

- To investigate nonpayer costing approaches in oncology CEAs

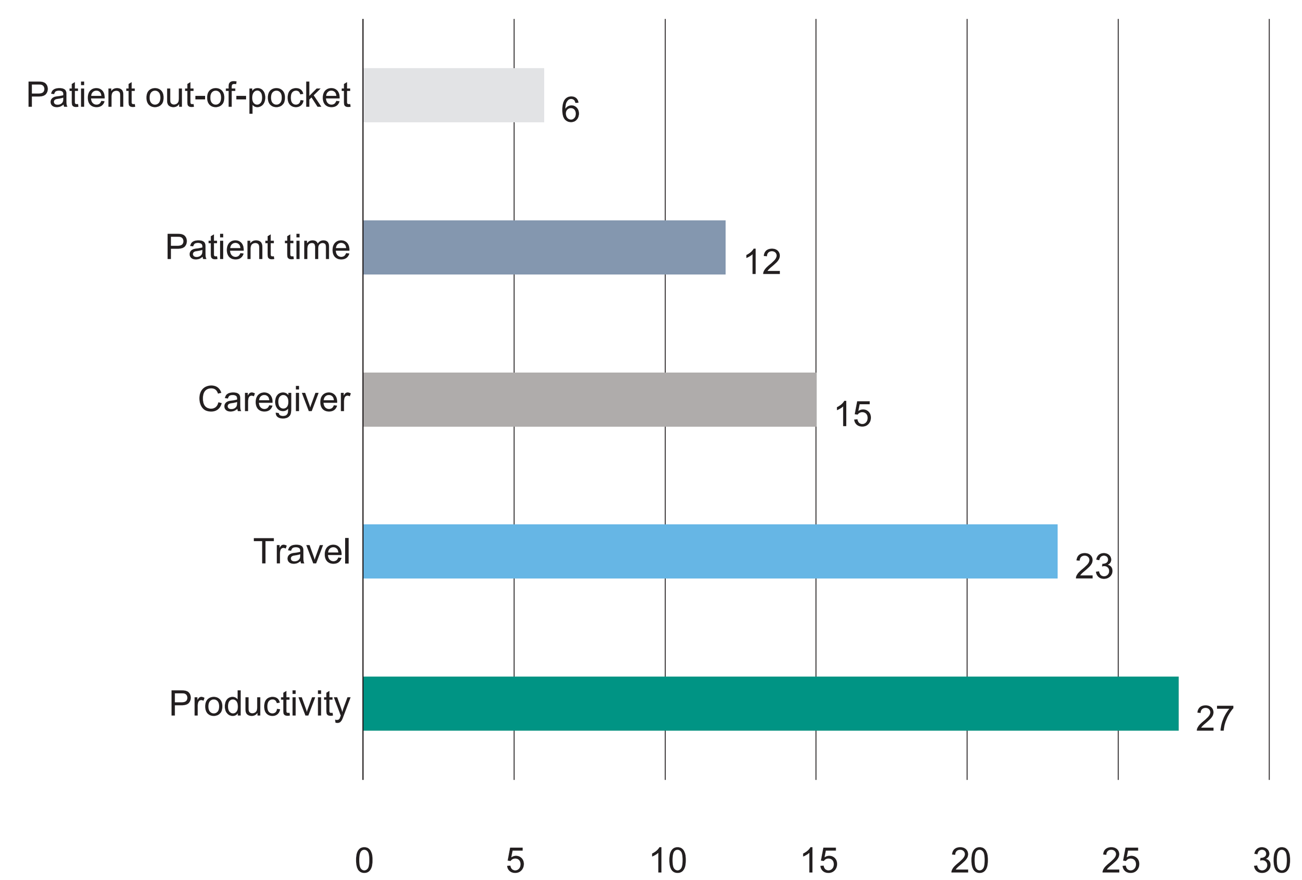
Methods

- PubMed/MEDLINE was searched from inception to November 2022 to identify English-language publications reporting CEAs where at least one of the perspectives was labeled as "societal"
- Study eligibility criteria were as follows:
  - Population: Any oncology indication. Countries of interest were in the United States (US), Canada, Australia, and the European Union
  - Interventions/comparators: Any oncology intervention treating the underlying disease
  - Outcomes: Nonpayer cost types reported, the methodology implemented, and incremental cost-effectiveness ratios (ICERs)
  - Study design: CEA
- Exclusion criteria were as follows:
  - Studies with no details on societal perspective
  - Studies evaluating diagnostic options or treatments for management of symptoms
- Screening and data extraction were performed by two independent reviewers

Results

- Of 587 records screened, 47 studies were included, with 29 US and 18 non-US studies. The four settings most common in oncology societal-perspective CEA publications included in the review were: US (n=27, 58%), Netherlands (n=6, 13%), Sweden (n=4, 9%), and France (n=3, 6%)
- Most studies provided little detail on nonpayer costing methods beyond identification of cost types
- Nonpayer cost categories included were highly variable. 57%, 49%, and 32% of studies reported productivity loss, patient travel, and caregiver costs, respectively
- Among studies that provided detail on productivity loss costing methods, various methods were represented. The most-often-observed productivity loss costing methods were the friction cost approach and human capital approach
- Despite many studies' inclusion of only a narrow set of nonpayer costs, authors tended to maintain use of the descriptor "societal" rather than "limited societal" perspective

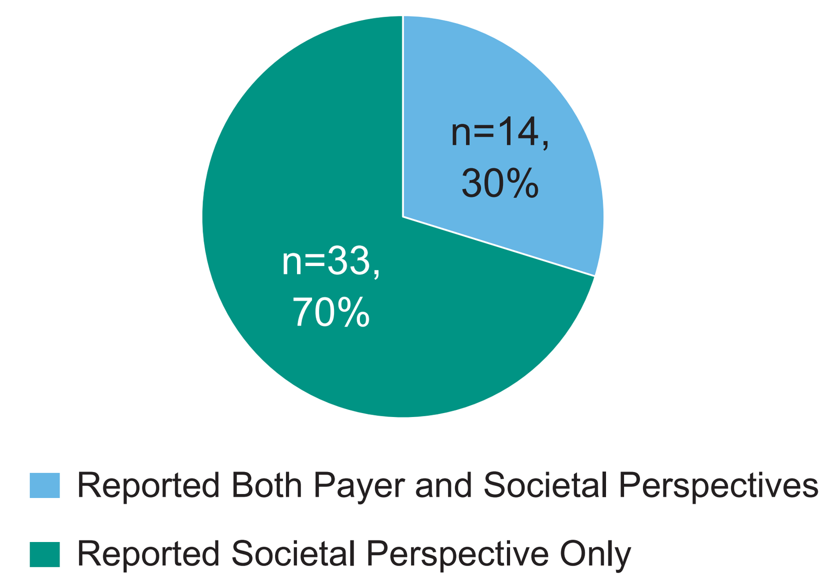
Figure 1. Frequencies of nonpayer cost categories included in societal-perspective oncology models



The figure reports the frequencies that each type of nonpayer cost was observed as included in a cost-effectiveness model across studies. The cost categories are not mutually exclusive, ie, models could have and often did include multiple categories in the nonpayer costing.

- 30% of studies reported both payer- and societal-perspective results. The ICER in the societal perspective was within ±20% of the payer perspective ICER in 43% of studies that included both perspectives
- The ICER in the societal perspective tended to be lower than that of the payer perspective. The ICER was lower in the societal perspective compared to the ICER in the payer perspective in 71% of models that reported both societal- and payer-perspective results

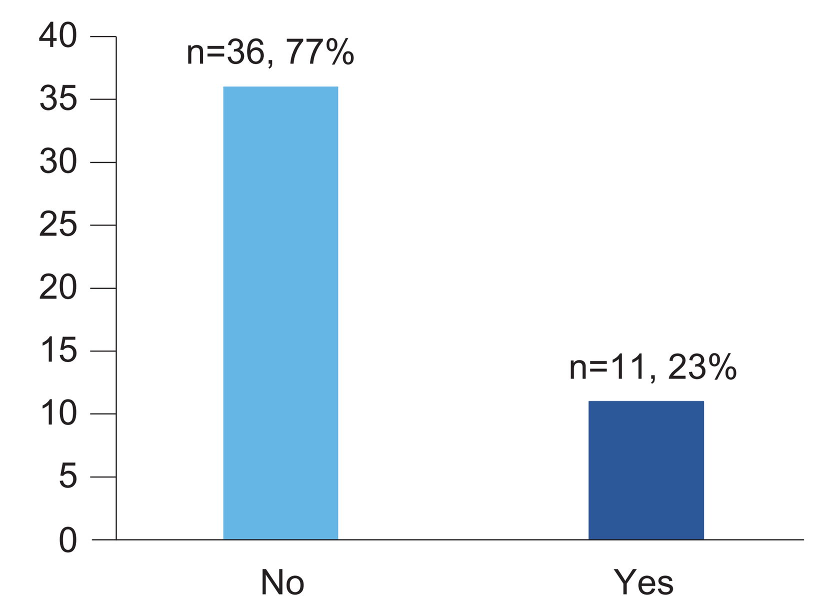
Figure 2. Perspectives included in cost-effectiveness model publication



The figure reports the proportion of the 47 articles reviewed that limited the scope to the societal perspective (n=33, 70%) vs the proportion that presented a payer perspective analysis in addition to the societal perspective analysis (n=14, 30%).

- Nonpayer cost inputs were not routinely subject to sensitivity analyses. Where they were included in sensitivity analyses, these inputs were rarely identified as an influential parameter

Figure 3. Sensitivity of societal-perspective oncology models to nonpayer cost inputs



The figure shows the count of 47 publications reviewed which did not (n=36, 77%) vs did (n=11, 23%) identify nonpayer cost input(s) as influential to the cost-effectiveness results via sensitivity analyses.

Table 1. Sample of recommendations concerning societal cost-effectiveness analyses and nonpayer costs

Recommendation	Source
CEAs report 2 reference case analyses, one based on a healthcare perspective and another based on a societal perspective.	Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine (Sanders 2016)[1]
CEAs include an "impact inventory" to enumerate costs and consequences considered in the analysis to clarify the scope and boundaries of the analysis.	Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine (Sanders 2016)[1]
In the societal perspective, consider all direct and indirect medical and nonmedical costs as well as additional societal-relevant costs. This recommendation is common to 13 (though not all) HTA guidelines.	(Avsar 2022)[2]
Describe the perspective of the study and relate this to the costs being evaluated.	CHEERS 2022 Checklist (Husereau 2022)[4]
Make reporting of costs included and costing methods transparent. Beyond a list of cost categories included, inform how these costs were selected and how the costs were incorporated in the model.	Based on current targeted literature review results
Provide sufficient detail regarding estimation approach for productivity costs (eg, if the friction, or human capital, or another approach was used).	Based on current targeted literature review results

- To better meet these recommendations, models can improve clarity in communicating included nonpayer costs via an impact inventory and by directly relating the included costs to the perspective adopted. Provision of statements about nonpayer costing methods, either in the text or via an online appendix, can improve transparency of this modeling aspect

Conclusion

- Societal-perspective oncology CEAs contained a diverse range of nonpayer costs. Methodologies used to model these costs are not standardized
- The societal perspective often, but not uniformly, generated an ICER that is more attractive with respect to the novel technology being evaluated, when compared to the payer perspective ICER for the same decision problem in this set of literature
- Model results tended to show little to no sensitivity to nonpayer cost inputs
- While recent attention in oncology modeling has focused on nontraditional value elements, this targeted review suggests a possible gap in the rigor and transparency in reporting the methodology behind nonpayer costing. A sample of recommendations concerning the societal perspective in CEAs and reporting of methods is summarized in **Table 1**

References

1. Sanders GD, et al. *JAMA.* 2016;316(10):1093-1103.
2. Avşar TS, Yang X, Lorgelly P. Pharmacoeconomics. 2023;41(2):123-138.
3. Kim DD, et al. *Pharmacoeconomics.* 2020;38(10):1135-1145.
4. Husereau, D, et al. *BMC Med.* 2022;20(1):23.

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