Increasing Efficiency of Systematic Literature Reviews: Are Multiple Databases Necessary?

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Background

- Systematic literature reviews (SLRs) are a cornerstone of evidence-based medicine, synthesizing available research to inform[1]:
  - Clinical practice guidelines
  - Health policy
  - Health technology assessments (HTAs)
- A defining feature of high-quality SLRs is a comprehensive and reproducible search strategy, typically including:
  - Multiple bibliographic databases
  - Gray literature sources
  - Predefined inclusion and exclusion criteria
- The *Cochrane Handbook for Systematic Reviews of Interventions* recommends that systematic reviews search multiple bibliographic databases to ensure comprehensive coverage.[2] When conducting SLRs where more rigorous methodology is required, such as for submission to health technology assessment, there are specific methods to follow including searching multiple literature review databases.
- However, in some contexts full rigor may not be feasible due to time or resource constraints. Although comprehensive searches are the gold standard, there is limited guidance on when searching fewer databases may be sufficient. This raises an important question: *Is PubMed (MEDLINE) alone sufficient for less rigorous SLRs?*

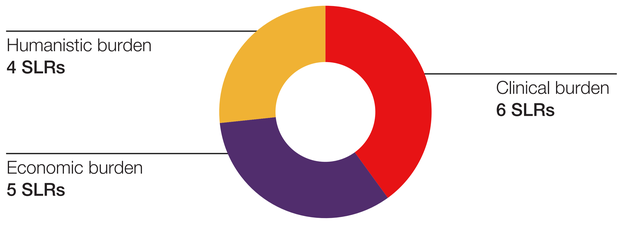
Objective

- We sought to explore whether the publicly available database PubMed, which searches MEDLINE, is sufficient for less rigorous SLRs and whether the comprehensiveness of the database differs by topic.

Methods

- Search results of 15 oncology-related SLRs conducted in the past five years were examined to identify the proportion of records to be screened that were available in MEDLINE versus Embase only. The included records of each SLR were also examined for this characteristic.
- Of these 15 SLRs, six were related to clinical burden, five economic burden, and four humanistic or utilities. Indications focused mainly on solid tumors, with one SLR on relapsed or refractory multiple myeloma (**Figure 1**).
- Trends were explored based on topic (clinical, economic, or humanistic) and date of search.

Figure 1. Overview of Included Systematic Literature Reviews



Results

- Across the evaluated SLRs, over half of the records screened were Embase-only records regardless of topic. When considering the number of articles included, the proportion of Embase-only records ranged depending on indication and topic but was under 50% in most SLRs. The unique Embase-only records were majority, and in some instances all, conference abstracts, often also available through publicly accessible gray literature sources.

Of all evaluated SLRs, **>50%** of records **screened** were Embase only

In most SLRs, **<50%** of records **included** were Embase only

Most of the included Embase-only records were **conference abstracts**

Figure 2. Proportion of Embase-only Records Screened, Title and Abstract Level

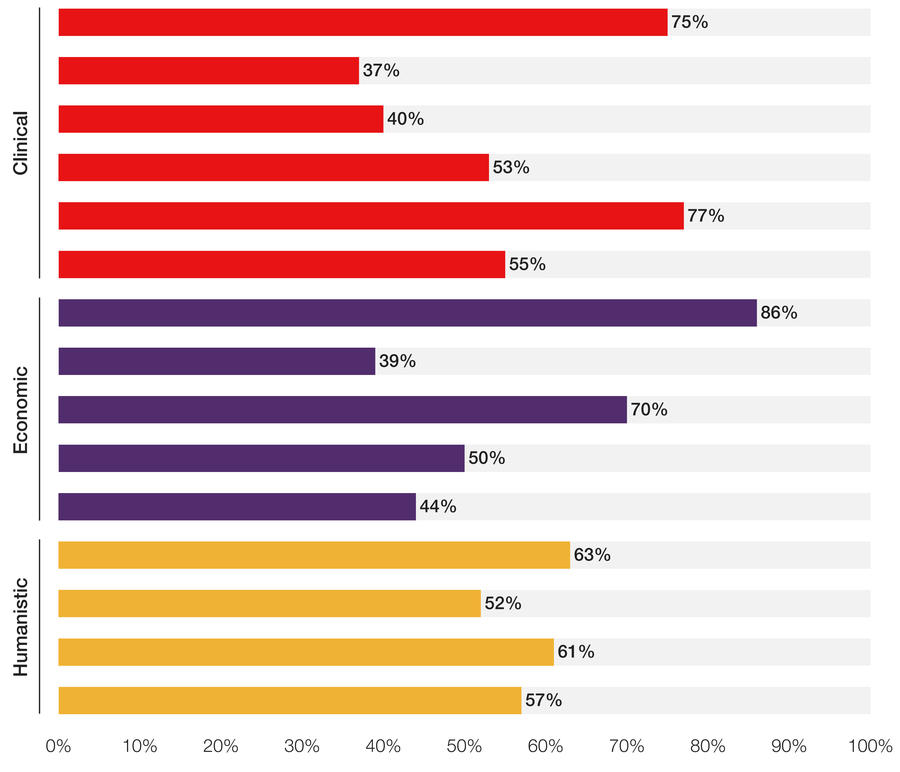
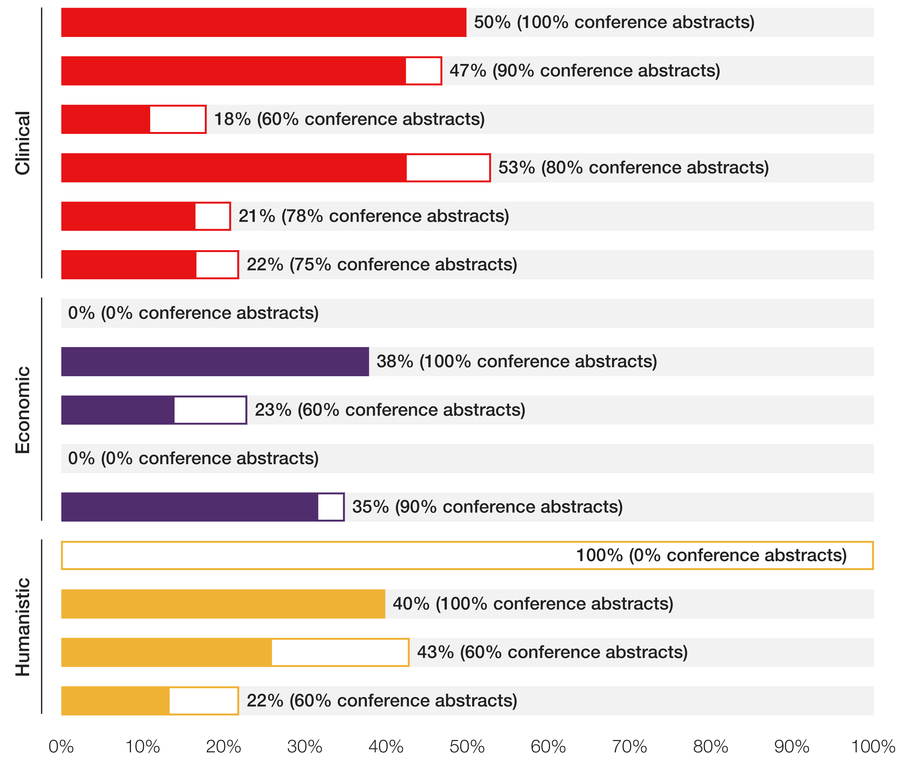


Figure 3. Proportion of Included Records that were Embase-only



Conclusions

- PubMed may be sufficient for less rigorous SLRs, particularly when supplemented with gray literature searches.
- Embase-only records represent a large share of the initial screening burden and are frequently excluded during screening. Removing these would reduce database screening effort by at least 40%.
- Excluding Embase searches may help reduce the initial screening burden, allowing for more efficient timelines and reduced costs in lower-rigor contexts.
- Trade-offs between efficiency and comprehensiveness should be considered for each project to guide database selection.
- Oncology is typically a highly covered topic; applicability should be explored for other disease areas.

References

1. Borgerson K. *Perspect Biol Med*. 2009;52(2):218-33.
2. Higgins J, et al. *Cochrane handbook for systematic reviews of interventions*. Version 6.4. Cochrane; 2023. Accessed April 29, 2026. https://www.cochrane.org/handbook

Disclosures

KS and MT are employees of PPD™ Evidera™ Health Economics & Market Access, Thermo Fisher Scientific.

Acknowledgments

Editorial and graphic design support were provided by Kawthar Nakayima and Shani Berger of Thermo Fisher Scientific.

Presented at ISPOR—The Professional Society for Health Economics and Outcomes Research | 17–20 May 2026 | Philadelphia, PA, USA