Overview

What are systematic reviews & meta-analyses?

Systematic Review

A systematic review answers a defined research question by collecting and summarizing all empirical evidence that fits pre-specified eligibility criteria.

- Systematic review = study of studies
- Systematic reviews collect and summarize the literature surrounding a topic
- Systematic reviews evaluate individual studies and analyze the findings
- Systematic reviews are useful for learning about general topics and relevant research

Meta-analysis

A meta-analysis uses statistical methods to summarize the results of a systematic review.

- Meta-analysis = study of studies
- Meta-analyses use statistical methods to analyze the findings in multiple studies
- Meta-analyses can include a pooled estimate and confidence interval for the treatment effect after combining all the studies; test for whether the treatment or risk factor effect is statistically significant and test for heterogeneity between the studies
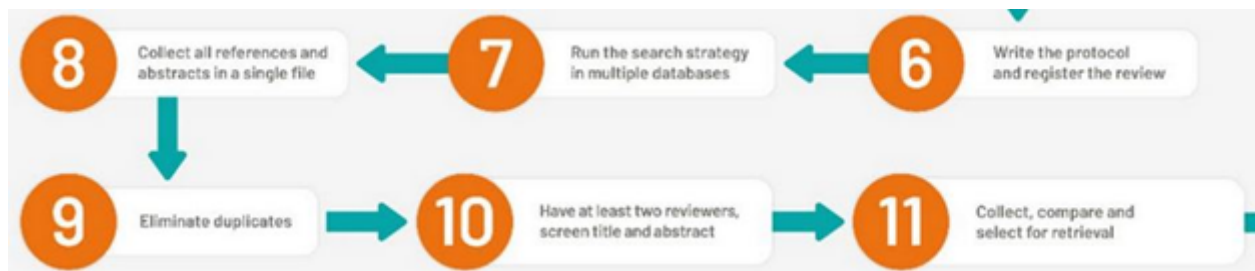
How are systematic reviews & meta-analyses conducted?

A great way to approach the development of systematic reviews and meta-analyses is to break them down into smaller and more simple executable tasks. A 24-step guide on how to design, conduct, and successfully publish a systematic review and meta-analysis in medical research is a helpful tool that provides authors with concrete steps to follow when starting the systematic review and/or meta-analysis process. These steps can be placed into the following general categories:

Define and design

Search and collect

8 Collect all references and abstracts in a single file	←	7 Run the search strategy in multiple databases	←	6 Write the protocol and register the review
↓				
9 Eliminate duplicates	→	10 Have at least two reviewers, screen title and abstract	→	11 Collect, compare and select for retrieval

Extract, evaluate, and consult "experts in the field" of interest

17 Evaluate study quality and risk of bias

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16 Apply data collection form (in pairs)

↑

15 Make the final selection list and draw the flow chart

↑

14 Search for additional references

↑

13 Contact experts

↑

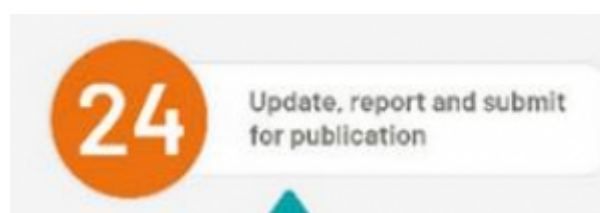**12** Retrieve full text and apply selection criteria

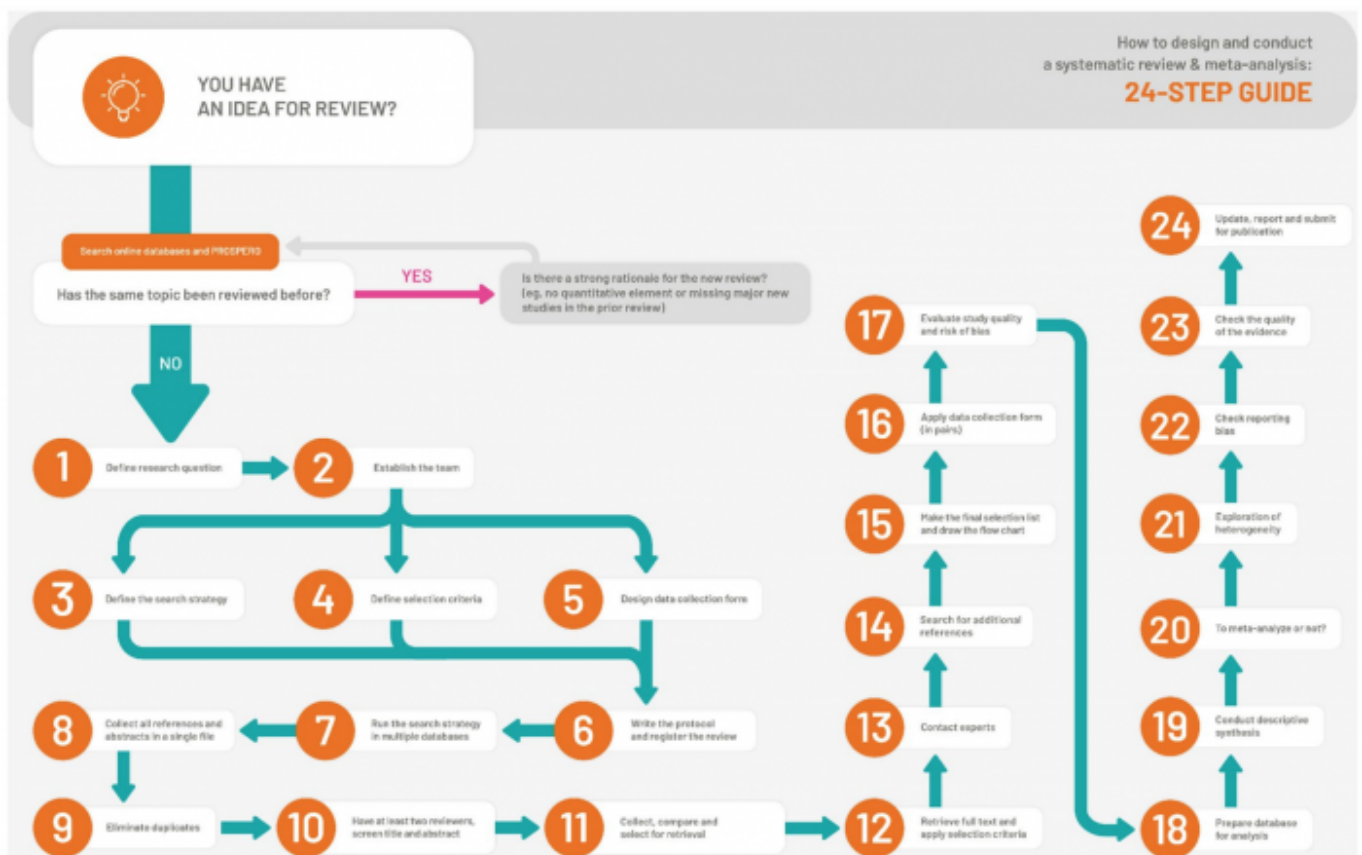## "Summarize and explain findings"

Check publication bias and evidence quality

Submit for publication

References

Muka, T., Glisic, M., Milic, J. *et al.* A 24-step guide on how to design, conduct, and successfully publish a systematic review and meta-analysis in medical research. *Eur J Epidemiol* **35,** 49–60 (2020). https://doi.org/10.1007/s10654-019-00576-5

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