

Systematic Review FAQs

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Ramona Naicker, November 2022

Am I doing a systematic review?

“A systematic review attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question. Researchers conducting systematic reviews use explicit methods aimed at minimizing bias in order to produce more reliable findings that can be used to inform decision making.”

- [The Cochrane Handbook](#)

Authors may confuse other types of review for a systematic review. The Knowledge Synthesis Decision Tool from Unity Health assists in decision making around what is the best type of review for authors, based on various parameters: <https://guides.hsict.library.utoronto.ca/SMH/systematic/decisiontool>

Why do I need a team to conduct a systematic review?

Having multiple reviewers minimises bias and strengthens analysis. Content experts are necessary to provide expertise on the topic, in developing the procedures and documentation standards, in searching and documenting procedures, to manage the references, and give advice on statistics. By definition, a **systematic review cannot be conducted by one person.**

What are the steps involved in a systematic review?

- **Planning:** Determine if/why research on this topic is needed; develop an answerable research question; agree on inclusion and exclusion criteria; develop and register a protocol
- **Identifying relevant literature:** create a search strategy and have it peer reviewed; identify which databases to search; identify additional sources/grey literature to search
- **Screening:** Determine which results to include according to inclusion/exclusion criteria. This is usually a two-step process with initial screening of titles/abstracts, and full-text screening of remaining papers
- **Assessing the quality of results:** Each paper should be quality appraised for bias using a validated tool; extract data from remaining papers
- **Writing up:** Summarise and synthesis the evidence; interpret the findings

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Why do I need a protocol?

A protocol outlines the details of your review before you start doing it; the rationale, hypothesis and planned methodologies. Writing up a protocol before you begin your review will reduce bias, improve transparency and reproducibility. Registering a protocol will also help avoid duplication of research. If you are planning to publish your review, it is best practice that you publish a protocol too. Cochrane reviews require protocols to be registered via Cochrane Library. Non-Cochrane reviews can be registered via databases such as [PROSPERO](#) and [Open Science Framework](#).

How long will it take to complete a systematic review?

Depending on the review team's capacity, a systematic review can take anywhere from several months to years until completion. Do not underestimate the time required to conduct a systematic review, the search process alone can take 4-6 weeks.

What if I just want to update an existing search?

This will save time on creating a search strategy, but the rest of the process may still be just as lengthy. If you are updating an existing search, ensure the eligibility criteria, strategy and limitations are as closely aligned with the original review as possible.

How do I develop a search strategy? How broad should my search strategy be?

For best results, ensure you consult with a librarian – contact us to find out more and/or arrange a training session on developing effective search strategies.

Systematic review searches should be comprehensive and of high quality, with no errors, therefore have the final strategy tested and peer reviewed. The aim of a systematic review is to locate all studies that meet the eligibility criteria, so be as broad (sensitive) as you can with considerations to capacity. If capacity is an issue, you may want to develop a more specific search strategy which will require supplementing your search in other ways (see *Supplementary searching* below).

How many databases should I search? What databases do I need to search?

It is necessary to search multiple databases. The number of databases to search will depend on scope and capacity (i.e., the more databases you search, the higher the number of results/workload).

Selection of databases will depend on your research question, as well as what is available to you.



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Your librarian can help you with this. Embase, Medline/PubMed and [CENTRAL](#) are often good places to start if you are undertaking a medical intervention-based review, though there may be more suitable/specialised databases for your topic.

Be aware that there is overlap in coverage between databases, and so you will likely retrieve duplicate results - think about how you will manage your results (See '*How can I manage the results?*' below).

Should my search strategy be the same for all databases?

Yes. When translating the search across databases you must ensure that your free text terms are the same. However, subject headings and syntax will vary between databases. See Cochrane's [Database Syntax Guide](#).

What is the difference between PubMed and MEDLINE?

[PubMed](#) is a platform where you can access Medline, the database of citations. Medline is the primary component of PubMed, so when you search PubMed, you are also searching Medline. In addition to Medline, PubMed also contains PubMedCentral papers, and articles that are 'in process' (not yet given subject headings).

You can search Medline without the PubMed database, through commercially available interfaces such as EBSCO or OVID.

Searching Medline via PubMed may be more user-friendly and allows you to access content additional to Medline. Searching Medline through a commercial interface (EBSCO and OVID) allows you to perform a more focussed search – you will get more specific match to your terms by searching in Medline.

See this guidance form the National Library of Medicine for more: [MEDLINE, PubMed, and PMC \(PubMed Central\): How are they different?](#)

How many results should I expect from a database search / what is the minimum or maximum number of results I should retrieve?

There is no upper or lower limit on how many results a systematic review search should retrieve. The number of results will depend on research question/topic, scope, inclusion/exclusion criteria, sensitivity of strategy, number of databases searched.



Can I filter/apply limits to the results?

Be aware that applying any filters/limits may reduce the comprehensiveness of your results.

- **Date and Language:** Many databases provide limiters for date and language, and these can be used with care.
- **Human:** Many databases provide limiters and/or subject headings for human studies. These are not appropriate for systematic review searching – not all human studies will have had the ‘human’ heading assigned to them, so using this limit will cause you to miss papers. A better (though not fool-proof) option would be to exclude those studies given the ‘animal’ subject heading through the use of the NOT Boolean.
- **Publication type (e.g., letter, commentary, review):** Same as with limiting to human studies – exclude those publication types that you do not want with use of the NOT Boolean.
- **Study type, geography, age group, gender and others:** For comprehensiveness, apply an additional concept to your strategy. It is quite common for a systematic review to only include RCTs, or specific age groups etc., and therefore a variety of standardised search strategies (aka search hedges) are available so that you don’t need to create a search strategy from scratch. The [ISSG Search Filter Resource](#) provides strategies for a variety of filters.

Supplementary searching: What other sources do I need to search?

For your search to be as comprehensive as possible, you should search sources additional to bibliographic databases. This could include:

- **Grey literature:** Non-commercial/academic publishing such as reports, evaluations produced by organisational bodies, public health, industries etc. See GreyNet’s [Document Types in Grey Literature](#).
- **Trials registries:** (By definition also considered grey literature) Searching clinical trial registries is essential for identifying additional trials that could increase the value of systematic reviews, and for the reduction of publication bias.
- **Handsearching of key journals:** Searching through journals and conference publications. Not all trials are included in bibliographic databases, or they may not have been identified via the database search, therefore handsearching key journals reduces the risk of missing important articles.
- **Bibliographic and citation searching:** Screening the bibliographies and citing articles of your final included papers for any research the database search might have missed.

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Do I need to document the search?

It is important that the search process is transparent and documented appropriately, for reproducibility and replicability in research. The [Preferred Reporting Items for Systematic Reviews and Meta-Analyses \(PRISMA\)](#) statement recommends using the PRISMA flow diagram to document this process. A PRISMA checklist should also be completed to ensure that each element of the PRISMA statement has been documented, as well as provide clarity. The search strategies for **all** databases, registers and websites, including any filters and limits used, should be published.

How can I manage the results?

Managing the results includes exporting citations from databases, importing to citation/reference management/systematic review software, deduplication of results, screening. You may have multiple thousands of results to manage.

There are various ways you can choose to manage your results. The most basic (but time consuming) being spreadsheet tools such as Excel.

Citation/Reference management software (e.g., [Endnote](#), [RefWorks](#), [Mendeley](#)) will allow users to upload results, deduplicate, and organise into folders. Multiple researchers may be able to access the same account.

Systematic review software such as [Covidence](#) or [Rayyan](#) allows users to upload results, deduplicate, and have multiple researchers blind screen the results.

What tools can I use to quality appraise?

All studies included in the review must be quality appraised for risk of bias. There are multiple critical appraisal tools available, for a variety of study types. Below is a non-extensive list:

- [JBI checklists](#): For a range of study types
- [CASP](#): For a range of study types
- [Cochrane Handbook - Chapter 8: Risk of Bias](#): Outlines how to critically appraise randomised trials using the Cochrane Risk of Bias tool
- [QUADAS-2](#): For diagnostic accuracy studies
- [ROBIS: Tool to assess risk of bias in systematic reviews](#): Assesses the risk of bias in systematic reviews
- [AMSTAR](#) Assesses the methodological quality of systematic reviews

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How do I extract study data?

You will need to extract certain data from your studies in order to compare them, for example, the population, methodologies, outcomes. Researchers often use a table or form to do this, such as Excel, though for larger/more complex projects systematic review software might be more helpful. Whatever you choose, it is best to pilot your data extraction tool to determine if you need to add/remove/clarify fields.

Should I include the collaborating librarian as an author?

Yes. If you are including search methods and/or search strategies created by a librarian, then they must be included as an author.

Where can I find more guidance?

See below for internationally recognised guidance. Contact the library for further resources, books etc.

- **Cochrane Handbook:** <https://training.cochrane.org/handbook/current>
- **CRD guidance:** https://www.york.ac.uk/media/crd/Systematic_Reviews.pdf
- **PRISMA:** <http://www.prisma-statement.org/>

