**SYSTEMATIC REVIEW – Process**

**What is Systematic Review:** From the [Cochrane Handbook for Systematic Reviews of Interventions](http://handbook.cochrane.org):

A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (*meta-analysis*) may or may not be used to analyse and summarise the results of the included studies.

**Key characteristics of a systematic review:**

- a clearly stated set of objectives with pre-defined eligibility criteria for studies;
- an explicit, reproducible methodology;
- a systematic search that attempts to identify all studies that would meet the eligibility criteria;
- an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and
- a systematic presentation, and synthesis, of the characteristics and findings of the included studies

How to cite the Handbook


The Handbook editorial team is currently [2017] updating Handbook versions 5.0, 5.1 and 5.2 for a planned release of Version 6 in 2018. This is a major update. Senior Scientific Editors Julian Higgins and James Thomas have reorganized some material to include recent developments. There are also several new chapters including writing a protocol, equity and specific populations, complex interventions, network meta-analysis, and synthesizing findings using non-statistical methods. Please note following the introduction of the Methodological Expectations for Cochrane Intervention Review (MECIR) standards, we set out to produce a minor Handbook update, version 5.2 to include these standards. Due to limited editorial capacity, we only produced a limited number of chapters. These chapters are 1, 8, 9, 10, 11, 12, and 21 and are available as [pdf versions](http://training.cochrane.org/handbook) for Cochrane members. These chapters only include minor edits to improve clarity, some limited new material and updating. There are currently no substantive changes to methods in these chapters, we expect to include these in Version 6. For more details visit [http://www.nationalacademies.org/hmd/Reports/2011/Finding-What-Works-in-Health-Care-Standards-for-Systematic-Reviews/Standards.aspx](http://www.nationalacademies.org/hmd/Reports/2011/Finding-What-Works-in-Health-Care-Standards-for-Systematic-Reviews/Standards.aspx)

**JAMAevidence Glossary:** Definition: **Systematic Review:** The identification, selection, appraisal, and summary of primary studies that address a focused clinical question using methods to reduce the likelihood of bias.
Team Work

Systematic Reviews are often a team effort. Important areas of expertise to cover are:

- **Content experts** - It is important to have team members or an active consultant to provide expertise in the area covered by the review. Input is usually needed from practitioners and researchers representing a variety of perspectives.
- **Systematic Reviews methods experts** - One or more persons with expertise in the methods of conducting Systematic Reviews is needed. This person may be responsible for developing the procedures and documentation standards for the review. A Systematic Review methods expert may also be a content expert, but more than one investigator-level reviewer is necessary, since some steps in the process require dual review or data checking that requires expertise in research and statistical methodology.
- **Statistician** - If meta-analysis is to be considered, access to a statistician with experience in meta-analysis is needed.
- **Medical librarian** - Database searching requires specialized knowledge that general research training does not provide. Preferably, the librarian searcher has experience with the extensive searching and documentation procedures that are a part of a systematic review.
- **Reference management** - Someone must be responsible for maintaining the database of references. Most SRs involve thousands of abstracts, and the use of software to manage the references is necessary. This person must be able to track which abstracts have been reviewed and their disposition (e.g., included or excluded, reason for exclusion).

-- http://libguides.library.qut.edu.au/systematicreviews

What is the difference between a Literature and a Systematic Review?

<table>
<thead>
<tr>
<th></th>
<th>Systematic Review</th>
<th>Literature Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
<td>Focused on a single question</td>
<td>Not necessarily focused on a single question, but may be an overview</td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td>A peer review protocol or plan is included</td>
<td>No protocol is included</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>Both provide summaries of the available literature on a topic</td>
<td></td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>Clear objectives are identified</td>
<td>Objectives may or may not be identified</td>
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<tr>
<td></td>
<td>Systematic Review</td>
<td>Literature Review</td>
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<td>--------------------------------</td>
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</tr>
<tr>
<td><strong>Inclusion and Exclusion Criteria</strong></td>
<td>Criteria stated before the review is conducted</td>
<td>Criteria not specified</td>
</tr>
<tr>
<td><strong>Search Strategy</strong></td>
<td>Comprehensive search conducted in a systematic way</td>
<td>Strategy not explicitly stated</td>
</tr>
<tr>
<td><strong>Process of Selecting Articles</strong></td>
<td>Usually clear and explicit</td>
<td>Not described in a literature review</td>
</tr>
<tr>
<td><strong>Process of Evaluating</strong></td>
<td>Comprehensive evaluation of study quality</td>
<td>Evaluation of study quality may or may not be included</td>
</tr>
<tr>
<td><strong>Process of Extracting Relevant Information</strong></td>
<td>Usually clear and specific</td>
<td>Not clear or explicit</td>
</tr>
<tr>
<td><strong>Results and Data Synthesis</strong></td>
<td>Clear summaries of studies based on high quality evidence</td>
<td>Summary based on studies where the quality of the articles may not be specified. May also be influenced by the reviewer's theories and beliefs</td>
</tr>
<tr>
<td><strong>Discussion</strong></td>
<td>Written by an expert or group of experts with a detailed and well grounded knowledge of the topic</td>
<td></td>
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</tbody>
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**Educational resources:**

- ePPI Centre: Systematic Reviews for Policy and Practice; and Methods for Research Synthesis - [http://eppi.ioe.ac.uk/cms/](http://eppi.ioe.ac.uk/cms/)
- Centre for Reviews and Dissemination: Introduction to SRs and Critical Appraisal Course: [http://training.cochrane.org/interactivelearning](http://training.cochrane.org/interactivelearning)

**What will make a successful systematic review:** [http://library.cumc.columbia.edu/characteristics-successful-systematic-review](http://library.cumc.columbia.edu/characteristics-successful-systematic-review)


**Steps in conducting Systematic Review:**

1. Develop a research question
2. Define inclusion and exclusion criteria (PICO structure: population of study/patient, interventional question, comparison if any, outcome applied to patient)
   a. P = patients and/or condition (population of study)
   b. I = Intervention or Exposure (required concept in a search)
   c. C = standard procedure
   d. O = looking up outcome
3. Locate studies = acquire (comprehensive literature search)
4. Select studies (inclusion/exclusion criteria)
5. Assess study quality (critical appraisal)
6. Extract and analyze data/results (Ex: Morrison 1999 for educational research)
7. Interpret results
8. Update and review (for later activity)

**Resources:**

**PRISMA** Statement (Transparent Reporting of Systematic Reviews and Meta-Analyses) – PRISMA guidelines for writing method

**PROSPERO** – International prospective register of systematic reviews

**Institute of Medicine (IOM) of the National Academies** – current The National Academies of Sciences Engineering Medicine

**Choosing Databases:**

- MEDLINE: PubMed/Ovid/Scopus
- EMBASE: SCOPUS (includes MEDLINE)
- CINHAL
- Web of Science
- Cochrane Library
- DARE
- Campbell Library (http://www.campbellcollaboration.org/lib/)
- LILACS (lilacs.bvsalud.org/en/)
- clinicaltrials.gov
- Sciences Literature/Grey Literature
  - Conference abstracts and Proceedings
- Dissertations and theses
- Library catalogs
- Reports
- Registered clinical trials and research
- Research via Open Access
- Hand searching

**Project Management – documentation**

- Search details – documentation of strategies used
- Search results – management
- Databases searched
- Number of records retrieved (date of search)
- Progress notes

"**Harvesting**"

- Gathering text words, phrases, subject headings
- Good reference articles on the topic
- MeSH scope notes and entry terms