Lecture #3: Search session

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Housekeeping

? Be sure to let me know about any changes you make to your search question or approach from the feedback you receive today

📚 Decide on your literature sources

Objectives

✓ Review essential concepts from last session

🔍 Complete a series of practical exercises related to developing and evaluating a complete search strategy and documentation

🖵 Class presentations and feedback

# Principles of systematic review searches

TRANSPARENT AND (AS MUCH AS POSSIBLE) REPLICABLE
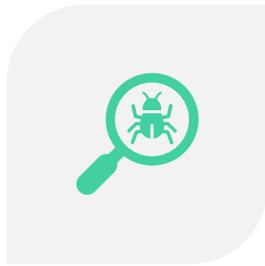
COMPREHENSIVE (SENSITIVE OVER PRECISE)
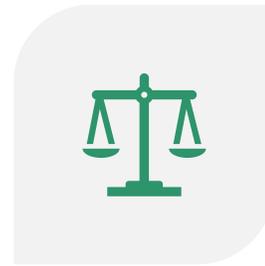
MINIMIZES POTENTIAL BIAS (BY BEING COMPREHENSIVE)
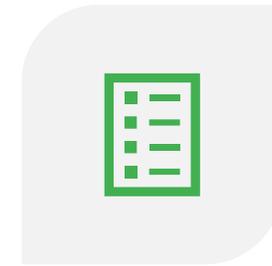
CONSISTENT WITH ESTABLISHED GUIDELINES (MECIR, ETC)

Guidelines: MECIR

Mandatory:

▶ general bibliographic databases (Medline, Embase) and CENTRAL;

▶ trial registers;

▶ reference lists;

▶ maximum sensitivity using structured strategies;

▶ using controlled vocabulary and free-text;

▶ justify any restrictions;

▶ document search process;

▶ update searches.

Guidelines: MECIR

Highly desirable:

▶ search specialist databases;

▶ search grey literature;

▶ search by contact;

▶ use specially designed search filters;

▶ incorporate findings from rerun searches.

Search process

1. Convert question/protocol to concept map

2. Develop strategy based on concept map in the primary database: controlled vocabulary, free text, filters

3. Assess search quality and revise as needed

4. Adapt strategy to other databases and additional sources of literature (grey literature, etc)

5. Execute searches and compile results

6. Screening

7. Citation searching

8. Analysis etc

9. Reporting

PRESS: Peer Review of Electronic Search Strategies

- Translation of the research question
  - Does the search strategy align with the PICO?
  - Are the search concepts clear?
  - Are there too many or too few PICO elements included?
  - Are the search concepts too narrow or too broad?
  - Does the search retrieve too many or too few records?
  - Are unconventional or complex strategies explained?

PRESS

- Boolean and proximity operators

  - Are Boolean and proximity operators used correctly?

  - Is the use of nesting with brackets appropriate and effective?

  - If NOT is used, is this likely to result in any unintended exclusions?

  - Could precision be improved by using proximity or phrases instead of AND?

  - Is the width of proximity operators suitable?

- Spelling, syntax and line numbers

  - Are there any spelling errors?

  - Are there any errors in system syntax?

  - Are there incorrect line combinations or orphan lines?

PRESS

- Subject headings
  - Are the subject headings relevant?
  - Are any relevant subject headings missed?
  - Are any subject headings too broad or too narrow?
  - Are subject headings exploded where necessary and vice versa?
  - Are major headings used? If so, is there adequate justification?
  - Are qualifiers missing?
  - Are qualifiers attached to subject headings?
  - Are qualifiers relevant and used appropriately?
  - Are both subject headings and free text used for each concept?

PRESS

- Free text
  - Does the search include all spelling variants?
  - Does the search include all synonyms and antonyms?
  - Does the search capture relevant truncation?
  - Is the truncation too broad or too narrow?
  - Are acronyms or abbreviations used appropriately? Do they capture irrelevant material? Are the full terms also included?
  - Are the keywords specific enough or too broad? Are too many or too few keywords used? Are stop words used?
  - Have the appropriate fields been searched? Are there any other fields to be included or excluded?
  - Should any long strings be broken into several shorter search statements?

PRESS

- Limits and filters
  - Are the limits and filters used appropriately and are they relevant given the research question?
  - Are all limits and filters relevant for the database?
  - Are any potentially helpful limits or filters missing? Are the limits or filters too broad or too narrow? Can any be added or taken away?
  - Are sources cited for the filters used?

Exercise #1: Concepts

- Clinical question: For patients in cardiac arrest, is therapeutic hypothermia associated with improved survival?

- What concepts would you include in a concept map for this question?

Exercise #2: Search Terms

- Clinical question: For patients in cardiac arrest, is therapeutic hypothermia associated with improved survival?

- What MeSH terms would you use?

- Brainstorm a list of free-text terms

- What specific filter(s) would you use?

Exercise #3: Bad Searches

Sample Medline search strategies: https://bit.ly/3rEVFWU

▶ What would you change about the search strategy as presented?

▶ Reminder: PRESS checklist - https://bit.ly/3rmL9R8

Exercise #4: Sources of literature

1. Are nurse-led educational interventions for diabetic adults effective in preventing nephropathy?

2. Does use of a mindfulness meditation app reduce stress in schoolchildren?

3. What is the efficacy of kinesio taping in managing bursitis in marathoners?

4. Does ginger consumption reduce mortality in elderly COVID-19 patients?

5. In children with dengue, does administration of lovastatin improve fever clearance time?

6. Does pre-hospital therapeutic hypothermia improve outcomes for cardiac arrest patients?

Exercise #5: Reporting

We conducted systematic searches of the following bibliographic databases:

- ▶ MEDLINE (Ovid, inception to 2021)

- ▶ Embase (Ovid, inception to 2021)

- ▶ Cochrane (Wiley, inception to 2021)

- ▶ EBSCO (EBSCOhost, inception to 2021)

We adapted the search strategy for MEDLINE for use in the other databases. We applied the Cochrane filter to all databases searched. We also conducted a search of the grey literature via Google using keywords. We searched all databases from inception to present and imposed no restriction on date of publication or publication status. We performed handsearching of journals in the area and reached out to industry contacts to identify missed studies.
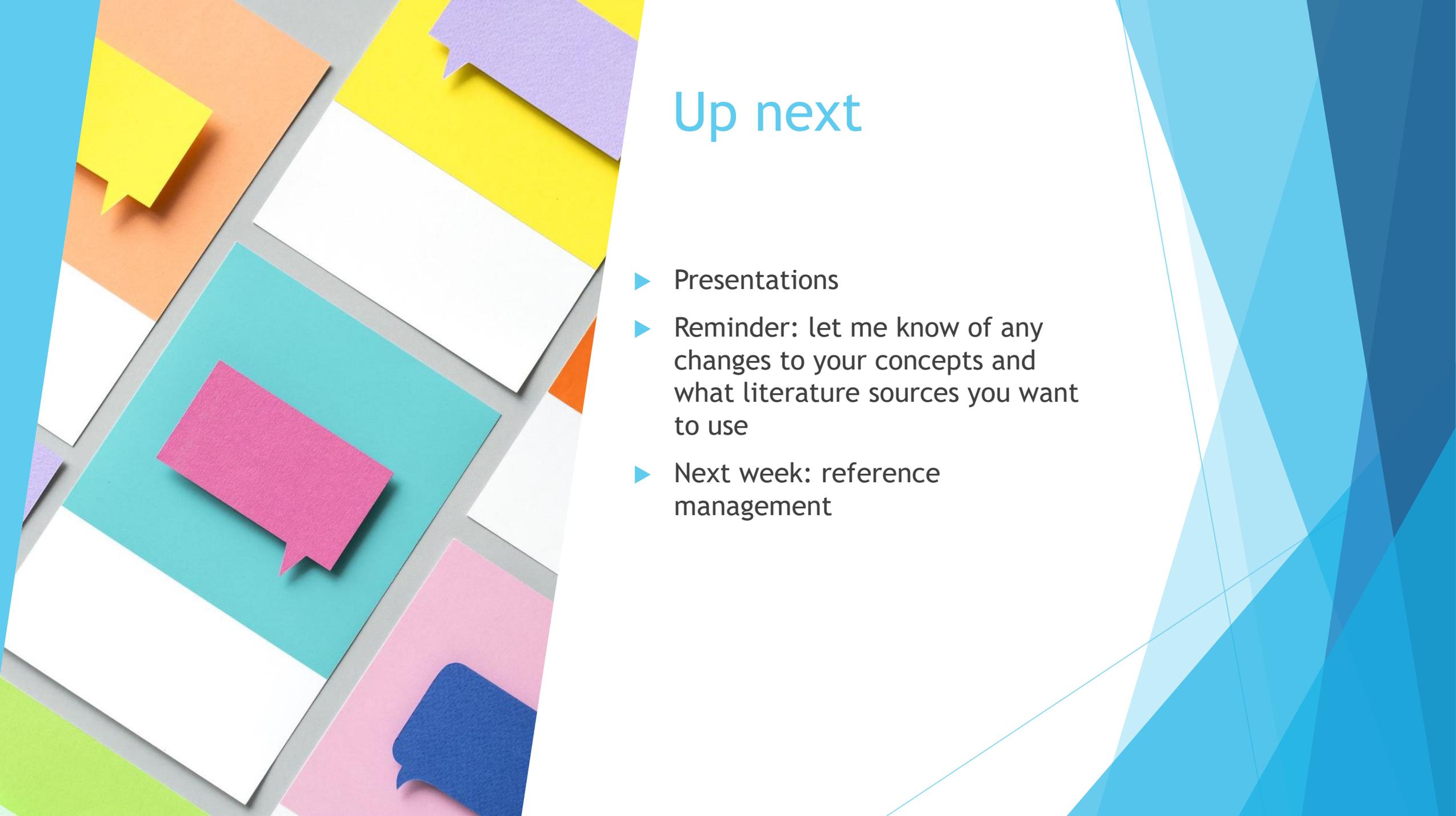
Up next

- Presentations
- Reminder: let me know of any changes to your concepts and what literature sources you want to use
- Next week: reference management