4. Searching the Literature: The Foundations

Today….. Establishing a research foundation…scratching the surface

- Conducting “the” literature search
  - Concept building and search construction
  - Anatomy of a search
  - Organizing your search results
- Selected information resources

Scholarly Literature and Publishing: Characteristics

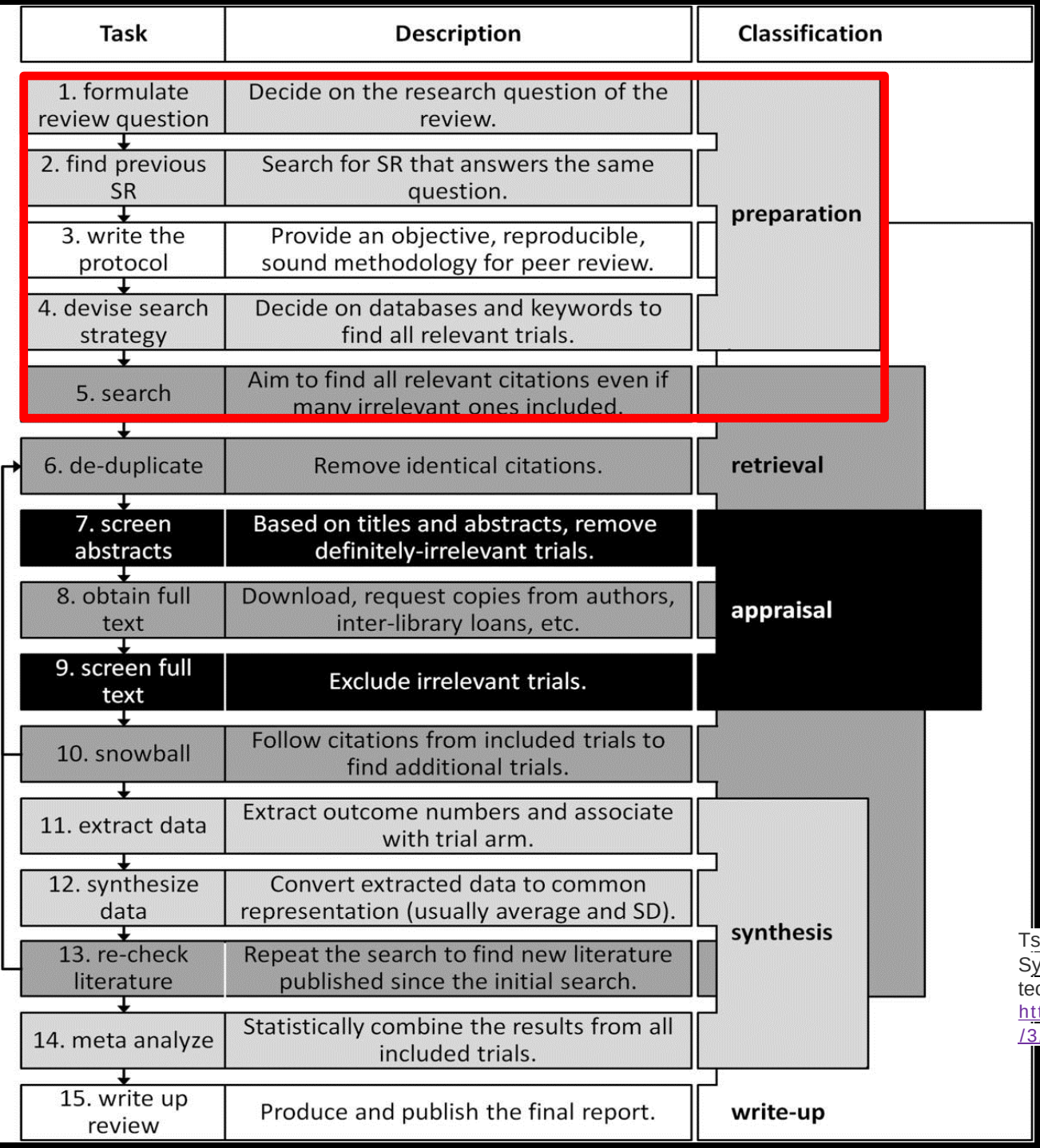
- Different patterns for different disciplines
- Older vs. recent literature
- Refereed vs. non-refereed publications
- Delays in publication
- Non-Western literature
- Communication with authors/sponsors for supporting data

Extensive Literature Search: Types of Searching

- Database Search
- Reference Tracking
  - i.e. Ancestry Search/Snowballing – some grey literature
- Citation Tracking
- Registry Search (i.e. ClinicalTrials.gov, Cochrane Register, HSRProj)
- Hand Searching
- Expert contacts - source of unpublished literature...
- Conference proceeding search
- Internet search
- Finding International Literature
- Finding Grey Literature (Fugitive Literature)

Literature Searching Basics

1. Establish research question
2. Select resources to use
3. Concepts and keywords
4. Organize your search strategy
5. Run your search
6. Evaluate your results (revise search strategy)
7. Select and organize articles



Tsafnet, G., Glasziou, P., Choong, M.K., et al. Systematic review automation technologies.*Systematic Reviews* 2014; 3:74; http://www.systematicreviewsjournal.com/content/3/1/74.

Search Basics

Conducting an extensive literature search: Step 1 - The Research Question

The comprehensive literature search begins with a *clearly defined and focused* research question

- Develop your strategy
- Know and Identify the appropriate information sources

1. Research Question:

Health outcomes of patients with breast cancer.

-Too broad

1. Research Question:

Is Bikram yoga more effective than Ashtanga yoga on perceived quality of life for women living with breast cancer?

-Too narrow

1. Research Question:

What are the effects of yoga on perceived quality of life for women living with breast cancer?

-Just right

Exercise:
Defining your research question

2. Resources

- Books
- Databases (journals, articles, etc.)
- Grey literature (dissertations, clinical trials, white papers, etc)
- Datasets
- Experts

3. Concepts and Keywords: Building the Search

Research Question:

*What are the effects of **yoga** on perceived **quality of life** for women living with **breast cancer**?*

- *Concept Building:*
  - *Major concepts*
  - *Alternate words*

yoga

quality of life

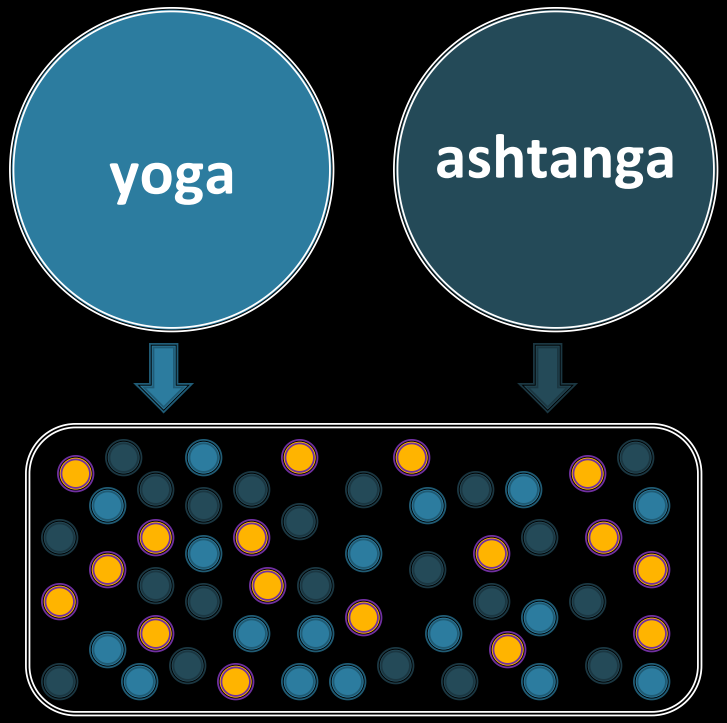
breast cancer

Boolean Operators

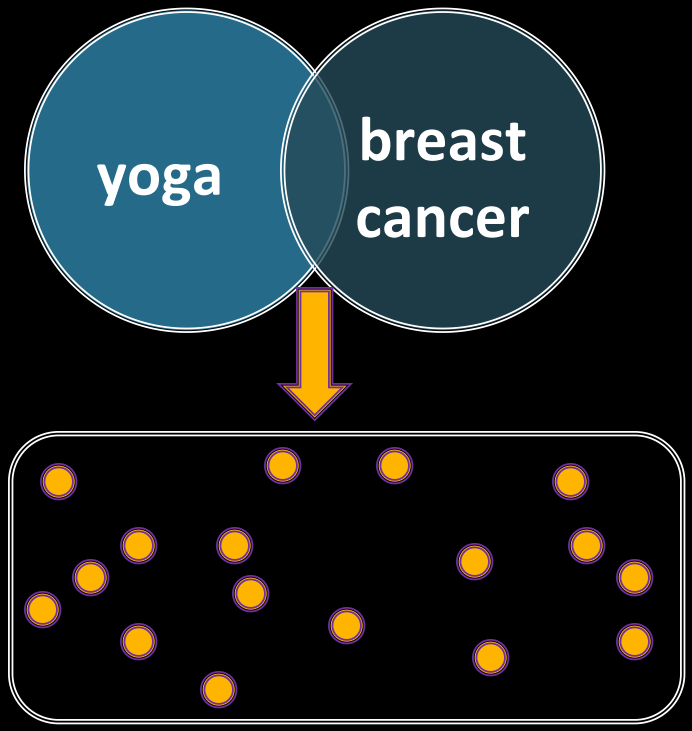
OR = **More** results
Combine **Synonyms**

AND = **Specific**
Combine different **Concepts**

yoga OR ashtanga



yoga AND breast cancer



Exercise: Your search terms (handout)

Search concepts	Alternate words

4. Organize Your Search

- Figure out which terms to include and how to combine your concepts and keywords
- Document your searches to make revisiting or editing them in the future easier

For example:

(yoga OR ashtanga) AND (quality of life OR wellness) AND (breast cancer OR breast tumour OR breast neoplasm)

Planning the Extensive Literature Search

- Identify major databases to search
- Determine the coverage of each database:
  - dates and currency
  - language(s)
  - geographic area(s)
  - material types (journals, books, reports)
  - sources indexed

Planning the Search

- Run trial searches to test strategies
- Evaluate results
  - Are you finding key articles you expected?
  - Are you finding articles on topics you wish to exclude?
- Refine search strategies as necessary
- Save final search strategies to rerun throughout the duration of the project

Managing Search Results

- Save with reference management software such as Mendeley, EndNote, RefWorks or Zotero
  - Edit/annotate references for key data elements

5. Run Your Search and 6. Evaluate Your Results

- Scan your results to evaluate relevancy
  - Are the articles on target?
  - If not, review your results and look for ways to improve your search
  - Have you combined your search terms correctly?
  - Revise and rerun your search
- Searching is an iterative/ongoing process…

Search is iterative!

Review your results.
Revise your search.
Rerun your search.
Repeat.

Searching with Phrases

Your search: **heart attack**

Article title:

*High-dose atorvastatin and risk of atrial fibrillation in patients with prior stroke or transient ischemic **attack**. (American **Heart** Journal)*

Your search: **“heart attack”**

Article title:

*Study links drugs for Alzheimer's disease with reduced risk of **heart attack** and death.*

6a. Revise (Limits)

- You may find limiting your search to publication types helpful:
  - Only want to see the highest levels of evidence? Limit to “Systematic Reviews”
  - Want to see individual studies? Possibly limit to “Clinical Trials” or “Case Reports”

Common Limits

- Publication types
- Publication date
- Languages
- Subject
- Sex
- Species
- Ages

6a. Revise (Resources)

- There may be a better database suited to your question
- Perhaps you are looking for background information rather than research

7. Select & Organize Articles

- Select the relevant articles
- Save the citations
  - Organize in a meaningful way:
    - By publication type? By author? Study types?
    - Add notes
  - There is no perfect way to organize them

When is your search sufficient?

- Major resources and discipline-specific resources have been searched
- Retrieval involves significant duplication
- Further retrieval is of little added value

Document Your Search

PubMed http://www.lib.umich.edu/database/link/9817

P:
((Geriatric [tiab] OR senior [tiab] OR elderly [tiab] OR aged [tiab] OR "Aged"[Mesh]) AND ("Nursing Homes"[Mesh] OR "nursing home" [tiab] OR "assisted living"[tiab]) AND (dementia[tiab] OR alzheimer*[tiab] OR "Alzheimer Disease"[Mesh]))

I:
("Complementary Therapies"[Mesh] OR "Acupuncture Therapy"[Mesh] OR "Alternative Medicine" [tiab] OR "Alternative Therapy" [tiab] OR "Complementary Medicine" [tiab] OR Acupuncture [tiab] OR "art therapy" [tiab] OR "doll therapy"[tiab] OR "play therapy" [tiab])

O:
("Behavioral Symptoms"[Mesh] OR "psychological symptom" [tiab] OR "Behavioral Symptoms" [tiab] OR Agitation [tiab] OR depression [tiab] OR aggression [tiab])

P AND I AND O

(("Behavioral Symptoms"[Mesh] OR "psychological symptom"[tiab] OR "Behavioral Symptoms"[tiab] OR Agitation[tiab] OR depression[tiab] OR aggression[tiab]) AND ("Complementary Therapies"[Mesh] OR "Acupuncture Therapy"[Mesh] OR "Alternative Medicine"[tiab] OR "Alternative Therapy"[tiab] OR "Complementary Medicine"[tiab] OR Acupuncture[tiab] OR "art therapy"[tiab] OR "doll therapy"[tiab] OR "play therapy"[tiab])) AND ((Geriatric[tiab] OR senior[tiab] OR elderly[tiab] OR aged[tiab] OR "Aged"[Mesh]) AND ("Nursing Homes"[Mesh] OR "nursing home"[tiab] OR "assisted living"[tiab]) AND (dementia[tiab] OR (alzheimer[tiab] OR alzheimer'[tiab] OR alzheimer"s[tiab] OR alzheimer'disease[tiab] OR alzheimer's[tiab] OR alzheimer's'[tiab] OR alzheimer'sdisease[tiab] OR alzheimer'ss[tiab] OR alzheimerand's[tiab] OR alzheimerandapos[tiab] OR alzheimerbeta's[tiab] OR alzheimergate[tiab] OR alzheimerian[tiab] OR alzheimeric[tiab] OR alzheimeris[tiab] OR alzheimerism[tiab] OR alzheimerization[tiab] OR alzheimerization'[tiab] OR alzheimerized[tiab] OR alzheimerns[tiab] OR alzheimerology's[tiab] OR alzheimeros[tiab] OR alzheimerpatienten[tiab] OR alzheimerrs[tiab] OR alzheimers[tiab] OR alzheimers'[tiab] OR alzheimers'disease[tiab] OR alzheimers's[tiab] OR alzheimertyme[tiab] OR alzheimertype[tiab] OR alzheimervalidation[tiab]) OR "Alzheimer Disease"[Mesh]))

38 results on 12/6/15

CINAHL http://www.lib.umich.edu/database/link/9911

"Geriatric" OR "elderly" OR "senior" AND "Nursing Homes" OR "assisted living" AND "dementia" OR "alzheimer" OR "Alzheimer Disease" AND "music therapy" OR "Aromatherapy" OR

DRAFT OUTLINE
Literature search

Databases searched: 1. MEDLINE
2. Web of Science
3. CINAHL
4. PsycINFO
5. Sociological Abstracts
6. ISI Proceedings

Search Topic #1: Psychosocial aspects of transition from pediatric to adult care
A) sickle cell anemia
B) cystic fibrosis

Search Topic #2: Self-management of illness
A) sickle cell anemia
B) cystic fibrosis

Search Topic #3: Qualitative Studies (Rana filter X 2 searches; Clin Queries optimized filter)
A) sickle cell anemia
B) cystic fibrosis

Search Topic #4: experiences/interactions with health care providers
A) sickle cell anemia
B) cystic fibrosis

Search Limiters = 20 years, 1987-

6 Databases X 10 = 60 searches

3B MEDLINE – Rana qualitative filter

1. qualitative$.ti,ab.
2. exp Interview/
3. interview$.ti,ab.
4. exp Qualitative Research/
5. eh.fs.
6. audiotape$.ti,ab.
7. exp Focus Groups/
8. exp Narration/
9. exp Tape Recording/
10. Interviews as Topic/
11. themes.mp.
12. exp Attitude to Health/
13. ethnograph$.mp.
14. exp Anthropology, Cultural/
15. or/1-14
16. exp *Cystic Fibrosis/
17. 15 and 16
18. limit 17 to (english language and yr="1987 - 2008")

3B MEDLINE McMaster Qualitative studies (optimised) filter

1. exp *Cystic Fibrosis/
2. limit 1 to "qualitative studies (optimized)"
3. limit 2 to (english language and yr="1987 - 2008")

3A Web of Science

Topic=(qualitative* OR interview* OR "qualitative research" OR ethnograph* OR audiotape* OR "focus group*" OR narration OR "tape recording*" OR "themes" OR "health attitudes") AND Topic=("sickle cell")
Timespan=1987-2008. Databases=SCI-EXPANDED, SSCI, A&HCI.
Refined by: Languages=(ENGLISH)

3B Web of Science

Topic=(qualitative* OR interview* OR "qualitative research" OR ethnograph* OR audiotape* OR "focus group*" OR narration OR "tape recording*" OR "themes" OR "health attitudes") AND Topic=("cystic fibrosis")
Timespan=1987-2008. Databases=SCI-EXPANDED, SSCI, A&HCI

3A ISI Proceedings

Topic=(qualitative* OR interview* OR "qualitative research" OR ethnograph* OR audiotape* OR "focus group*" OR narration OR "tape recording*" OR "themes" OR "health attitudes") AND Topic=("sickle cell")
Timespan=1990-2008. Databases=STP, SSHP.

SUMMARY OF RETRIEVAL

DATE OF SEARCH RETRIEVAL – APRIL 2013

Database	Results	Folder Results after exact duplicate citation removal done in RefWorks	Date search conducted
MEDLINE	952	922	2 April 2013
CINAHL	251	248	2 April 2013
EMBASE	463	460	24 April 2013
SCOPUS	513		2 May 2013
Web of Science	382		
Global Health	236 **CHECK THIS # IN RW & SEARCH STRAT.**		24 April 2013
Cochrane Library (incl. Cochrane DB of Syst Rev, Cochrane Central Register of Controlled Trials, NHS Economic Evaluation DB)	18	17	2 April 2013
Health Policy Reference Center			
PAIS International??			
GoogleScholar			
MEDLINE results from EMBASE.com	360	**NOT YET DEDUPLICATED**	24 April 2013

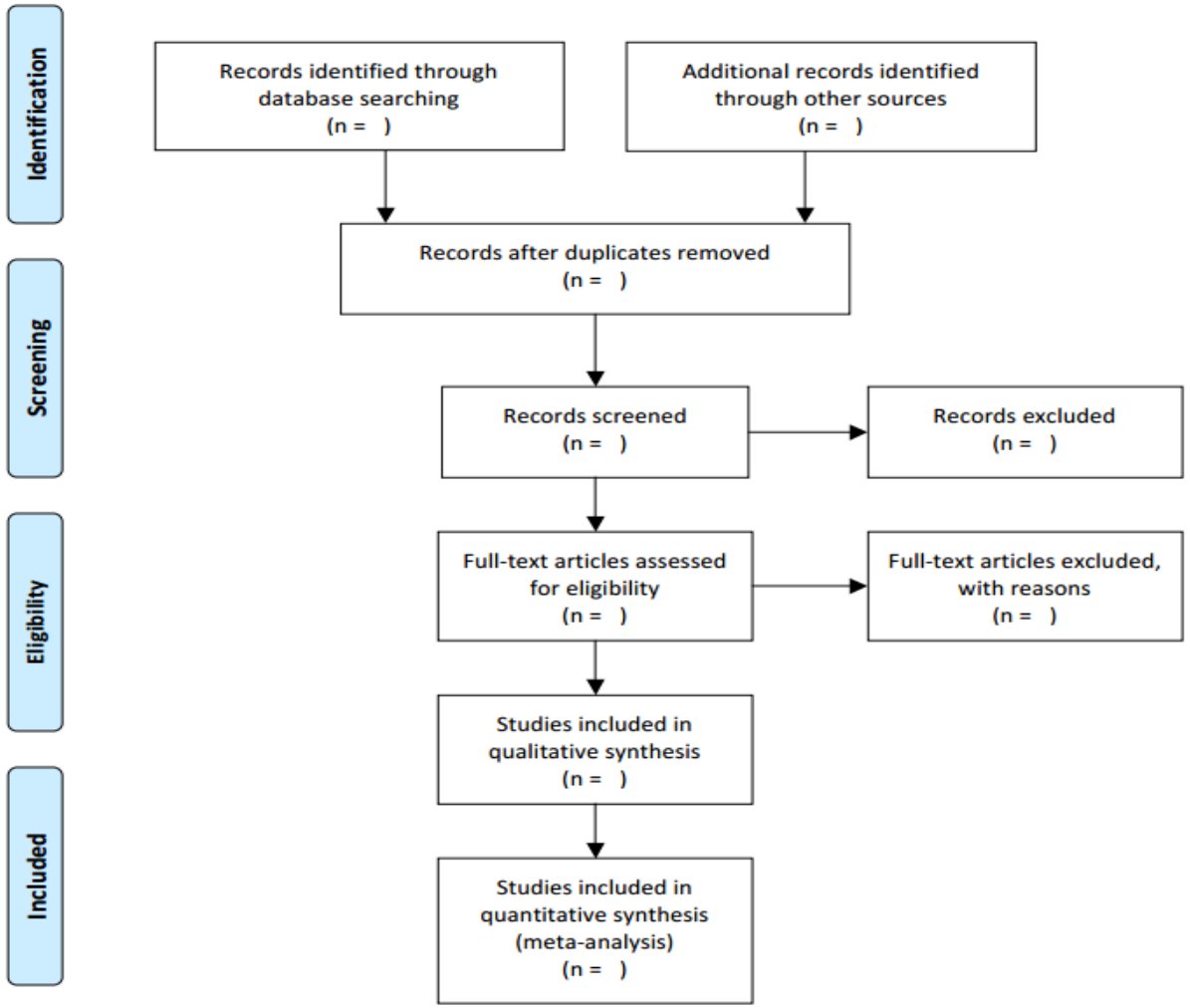
Document Your Search

- Describe the search strategy in sufficient detail so that it can be replicated
  - Note the major databases/resources searched
  - Note the major search terms & limits used for each database
  - Date of the initial search

Advanced Searching

1. Build base search in one database (usually PubMed)
2. Translate the base search to another database/s
3. Once all searches in each database look good, rerun them again
4. Export all the results into a citation management tool (e.g. Mendeley)
5. Remove duplicates
6. Document every step of the process (e.g. for PRISMA flowchart)

PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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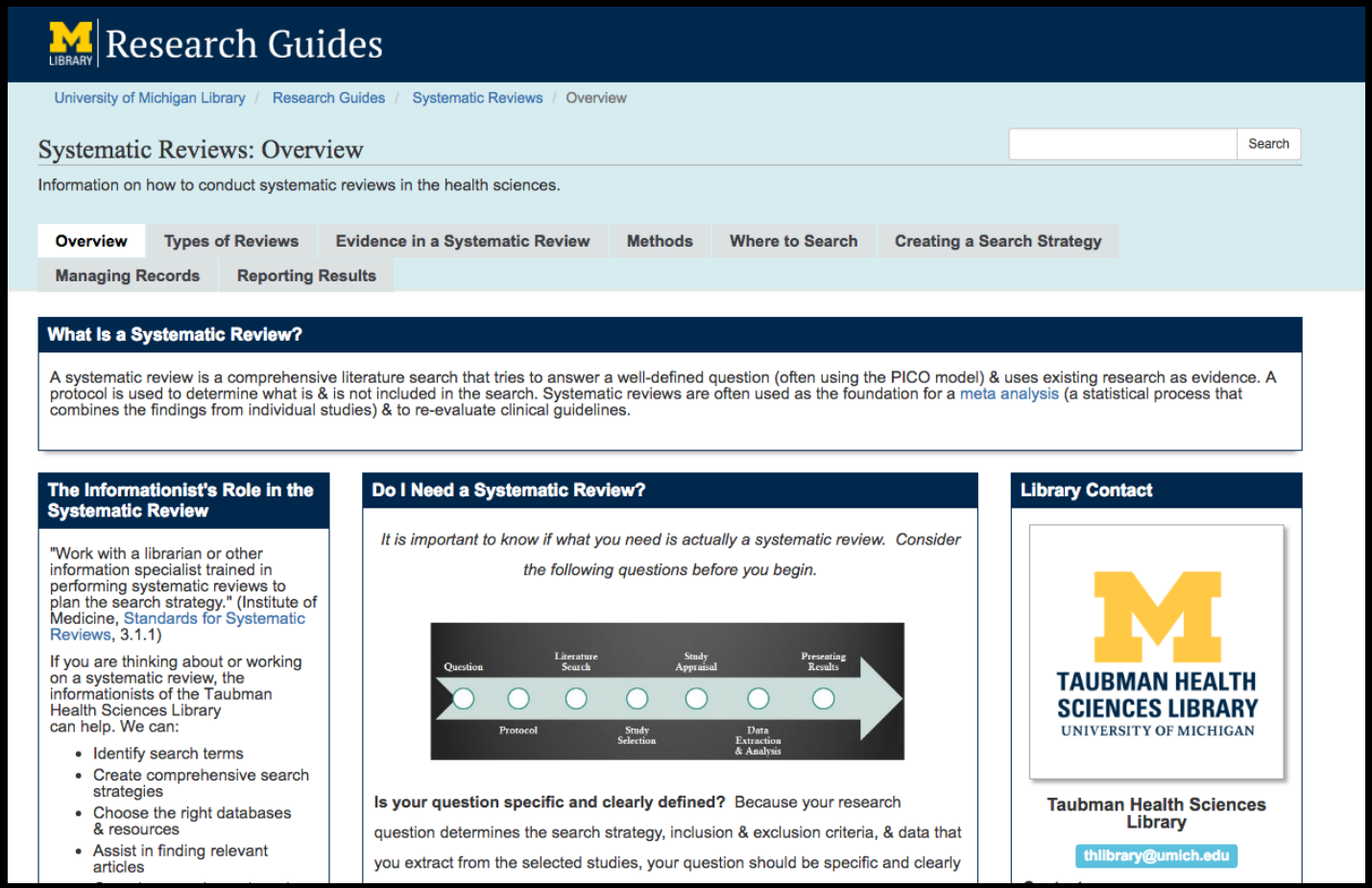

http://guides.lib.umich.edu/sysreviews

questions?