Developing a Research Question: Introduction to Literature Review & Secondary Analysis

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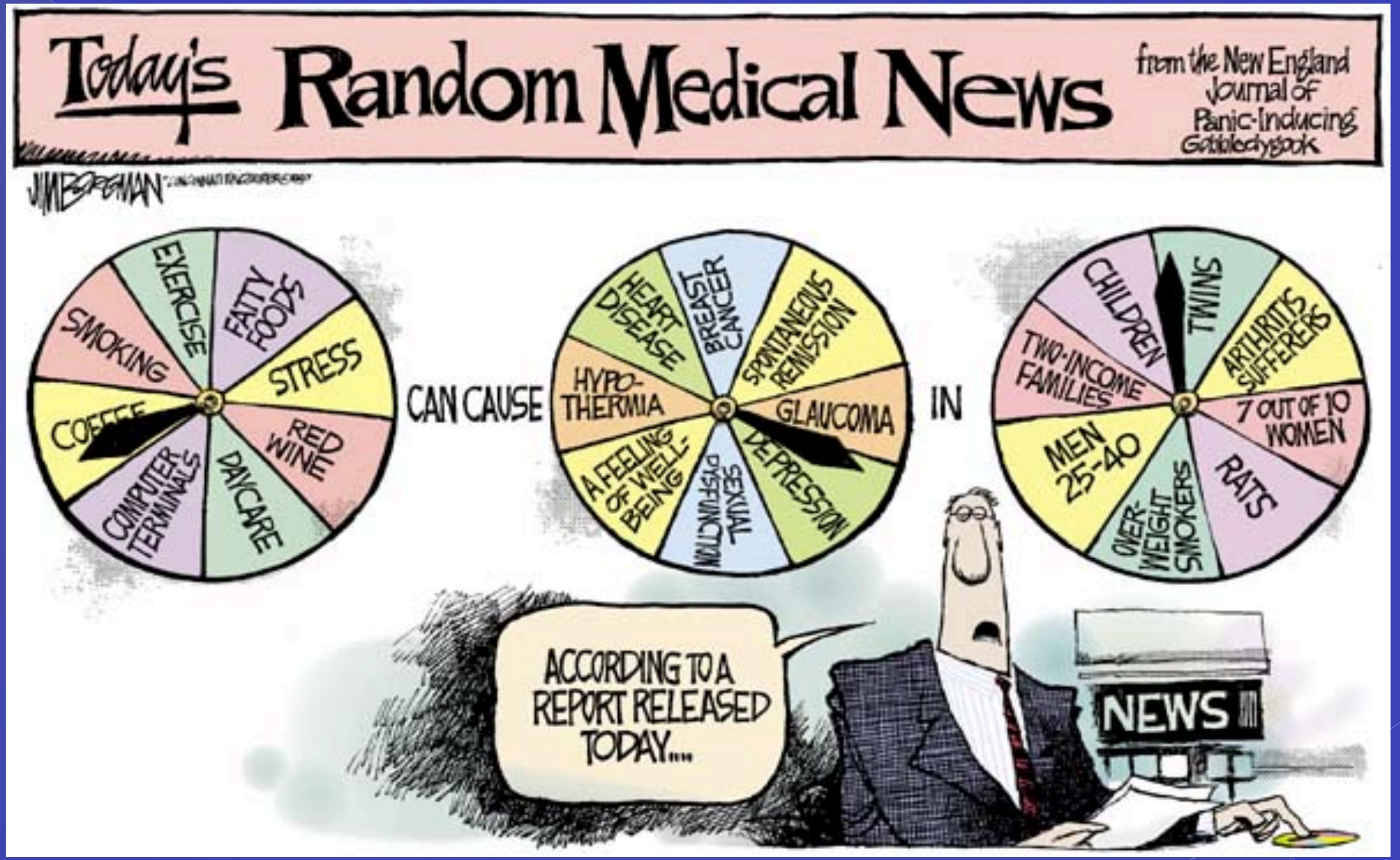
Overview of presentation

- Developing a Research Question
  - Group exercise #1
- Purpose and types of literature reviews
- Literature searching
  - Group exercise #2
- Purpose and types of secondary analyses
- Additional resources

Developing a Research Question


Today's Random Medical News
from the New England Journal of Panic-Inducing Gobbledygook
JIM BORGMAN
SMOKING
EXERCISE
FATTY FOODS
STRESS
COFFEE
RED WINE
COMPUTER TERMINALS
DAYCARE
CAN CAUSE
HEART DISEASE
BREAST CANCER
SPONTANEOUS REMISSION
HYPO-THERMIA
GLAUCOMA
A FEELING OF WELL-BEING
SEXUAL DYSFUNCTION
DEPRESSION
IN
CHILDREN
TWINS
ARTHRITIS SUFFERERS
TWO-INCOME FAMILIES
7 OUT OF 10 WOMEN
MEN 25-40
OVER-WEIGHT SMOKERS
RATS
ACCORDING TO A REPORT RELEASED TODAY...
NEWS

What is a research question

Have you ever wondered....

'What is the effect of (_____) on uptake of PrEP among adolescents in Zimbabwe?'

'Is there a difference between (_____) in the practice of safe male circumcision?'

'What characteristics are associated with (_____) among postpartum women in Chitungwiza?

You are well on your way to developing a research question!

Often begins with a general question:

- Should women take hormones to prevent bone loss?
- Can PrEP prevent HIV acquisition?
- Can diabetic patients be taught to control their blood glucose levels?

And must be narrowed to something measurable:

- Is taking estrogen associated with a lower risk of osteoporosis in women aged 60+?
- Is taking PrEP associated with a lower risk of HIV infection among HIV-negative women at risk for HIV?
- Can a structured intensive diabetes education program help patients with type 2 diabetes control their blood glucose levels?

Generation of research questions and hypotheses

- Clues from many sources and your imagination lead to generation of research questions and hypothesis formation
  - Compare groups with different disease rates and try to identify characteristics that account for differences.
  - Are there common characteristics that link affected groups?
  - Are there variations over time of a likely causal factor?
  - Analogies with other diseases?

- Hypotheses are generally the answer to the research question and are traditionally stated as NO relationship between the exposure and disease.

Sources to jump start the generation of a research question

- Searching the scientific literature
- Mentor
- Conferences
- Previous research
- Patients

Searching the literature

- Good scholarship is essential – no need to reinvent the wheel
- Conduct a meta analysis or systematic review to evaluate the existing literature
- Consult the Cochrane Library to see if a systematic review has already been completed

Searching the literature

[Protocol]

Hormone replacement therapy for osteoporosis in postmenopausal women

P Tugwell, G Wells, B Shea, J Peterson, A Cranney, D Henry, D O'Connell, J Robertson, WG Gillespie

Cochrane Database of Systematic Reviews 2007 Issue 2

DOI: 10.1002/14651858.CD000354 This version first published online: 23 October 2000 in Issue 4, 2000
Date of Most Recent Substantive Amendment: 30 August 2000

This record should be cited as: Tugwell P, Wells G, Shea B, Peterson J, Cranney A, Henry D, O'Connell D, Robertson J, Gillespie WG. Hormone replacement therapy for osteoporosis in postmenopausal women. (Protocol) *Cochrane Database of Systematic Reviews* 2000, Issue 4. Art. No.: CD000354. DOI: 10.1002/14651858.CD000354.

Next >

Abstract

This is the protocol for a review and there is no abstract. The objectives are as follows:

The objective of this systematic review is to develop estimates on the benefits of preventive treatment with hormone replacement therapy (HRT) for osteoporosis, taken for long term in postmenopausal women.

We will test the following hypothesis: the use of HRT slows bone loss and has a beneficial effect on the axial and appendicular bone density , thus preventing fractures of women in menopause.

Your previous research

If you've been working in a particular area, your own work may generate new research questions. In a study you published in JAIDS, you reported that a pharmacist-led education program increased uptake of HIV self-testing and linkage to care among adult women.

- Now you wonder if:
  - a text message driven educational program could have an even bigger effect in this population?
  - Or if the pharmacist–led program might help men? Or adolescents?

Patients

- Mai Chitungwiza comes to you. She does not have HIV but her husband has HIV. They normally use condoms because her husband does not like taking ART. She asks if she can take Pre-exposure ART (Truvada) and remain HIV negative while trying to get pregnant. You search the literature and find little research in this area.

- You decide to design a study to answer this question:
  - Does taking PrEP reduce the likelihood of HIV transmission in HIV-discordant couples who are trying to get pregnant?

Components of a research question using the PICO format

	Example
P = Population	The group of people with the particular health condition of interest (e.g. Men aged 18-25 with HIV)
I = Exposure/Intervention	The particular aspect of health care that is of interest (e.g. a therapeutic (antibiotic), a prevention (condom), a diagnostic (viral load), an organizational (implementation of a bar-coding system to reduce errors) intervention
C = Comparison Intervention/Control	Standard Care or no intervention (e.g. new antibiotic in comparison to existing antibiotic or placebo); comparison of two treatment settings (hospital-based care or home care)
O = Outcome	More effective outcome (e.g. fewer opportunistic infections, reduced incidence of HIV)

Example of a research question using the PICO format

	Example
P = Population	Women aged 15-25 at risk for HIV
I = Exposure/Intervention	PrEP/Truvada
C = Comparison Intervention/Control	Standard of Care or no PrEP
O = Outcome	HIV acquisition

Research Question Formulated: Does taking PrEP reduce the likelihood of HIV acquisition among women aged 15-25, compared to women not taking PrEP?

Null Hypothesis: PrEP does not reduce the likelihood of HIV acquisition among women aged 15-25.

How to evaluate research questions

- When evaluating your research question, or a colleague's research question, ask yourself:
  - Has s/he reviewed the literature?
  - Is this question of public health significance?
  - Is this question ethical?
  - Has s/he examined whether the question is feasible to answer (e.g. time, money, population, scope)?
  - Are the variables clearly defined?
  - Is the population specified?
  - Can the question be tested?
  - Is the question novel and unanswered?

When considering public health significance.... Ask yourself:

- Will the specific discipline (e.g. Medicine), or society benefit from knowing this information?
- Are the results applicable to public health practice?
- Do the findings extend evidence to untested assumptions, extend or challenge an existing theory, fill a gap in the literature, help to clarify a conflict?
- Will answering the question provide evidence to support developing, retaining, or revising practices or policies?

Example: Does taking PrEP reduce the likelihood of HIV acquisition among women aged 15-25, compared to women not taking PrEP?

- Is this question of public health significance?
- Is the question is feasible to answer (e.g. time, money, population, scope)?
- Are the variables clearly defined?
- Is the population specified?
- Can the question be tested?
- Is the question novel?
- Would the study be ethical?

Group Exercise #1

- Writing your own research questions
  - Come up with 1-2 research questions (20 minutes)
    - Well defined, testable, maximum 1-2 sentences
      - P = Defined population
      - E/I = Exposure/Intervention
      - C = Comparison/Control group
      - O = Outcome
  - Select a representative from your group to give 3 minute presentation on your best research question, including *public health significance* and *feasibility*
  - Receive constructive feedback from your colleagues about your research questions, and revise as needed

Group 5

- Does use of DMPA in HIV uninfected women aged 18-34 years upregulated expression and impair T-cell cytokine production compared to those on non-hormonal contraception.
- P=women aged 18-34 years
- I/E= DMPA
- C= non-hormonal contraception
- O=upregulation of cellular markers and T-cell cytokine production

Group 2

- In HIV-uninfected adolescent girls, does the use of multiple prevention technology compared to standard of care sexual reproductive health services reduce the risk of both HIV acquisition and unplanned pregnancies
- P=
- I/E=
- C =
- O =

Group 3

- Does ART increase the risk of hypertension in adult patients aged 18-50 years attending the OI clinic at Pari
- P=HIV positive patients attending the OI clinic
- I=taking ART
- C = ART naïve
- O=hypertension

Group 1

- Did increased access to ART coverage from 2010-2015 improve outcomes of cryptococcal meningitis in HIV –infected adults admitted at Pari hospital
- P=HIV positive patients over 18 years admitted at Pari
- I=increased access to ART
- C = rates from Pari before increased access to ART 2005-2010)
- O=statistics of deaths/life

Group 4

- A cost-effectiveness comparison study of laparoscopic vs open hysterectomy in zim women undergoing hysterectomy for benign disease
- P=women having hyst for benign disease
- I=Lap hysterectomy
- C women having open hysterectomy
- O=cost-effectiveness

Group 6

- What is the difference in knowledge attitudes and practices in patients with type 2 diabetes attending public health care facilities in Harare who have received standardized diabetes education compared to control
- P
- I=
- C=
- O=

Literature Reviews

Purpose of a Literature Review

- Identify, analyse, assess, and interpret a body of knowledge related to a particular topic or research question
- Normally required as part of a manuscript, or part of a research proposal.
- Sets a context for a research study, rationale for addressing a particular research question, justifies the proposal/manuscript in terms of a gap in existing knowledge
- Direct benefits to you:
  - Helps you generate interesting new research questions
  - Increases your expertise in the topic area

Types of Literature Reviews

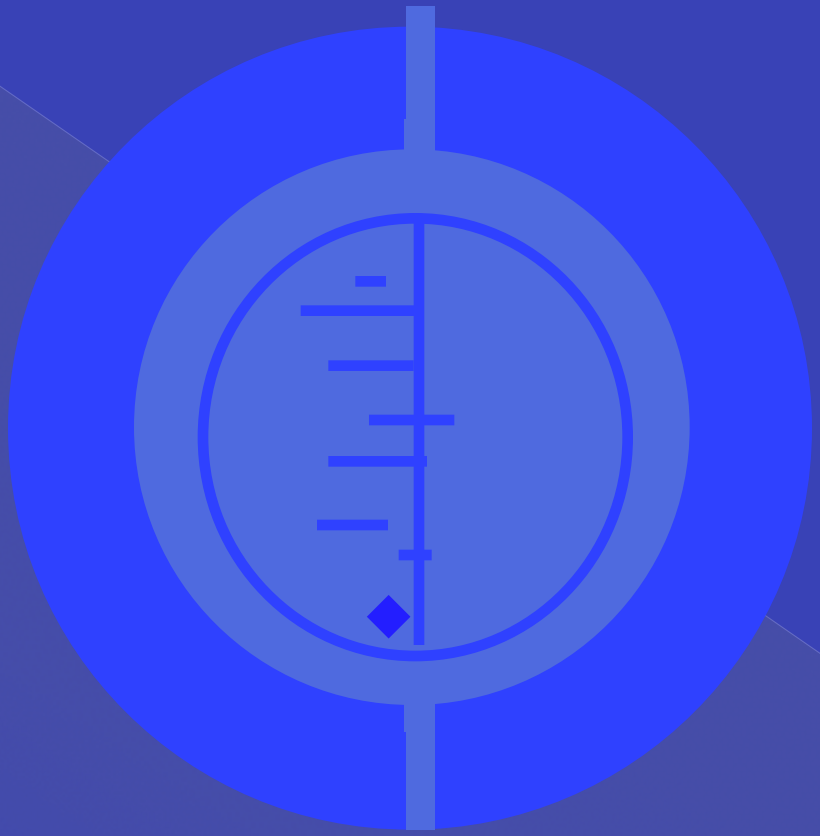
- Narrative Reviews: the reviewer offers a critique in order to assess, analyze and synthesize previous research
  - Introduction to research proposals
  - Background/introduction to a research manuscript
- Systematic Reviews: substantive, stand-alone studies in their own right
  - Serve to assess what is known and not known on an area of study, or efficacy of an intervention

	Systematic Reviews	Traditional Narrative Reviews
Review question formulation	Start with clear question to be answered or hypothesis to be tested. Specific: the populations, intervention, comparison, and outcome (PICO) of interest are specified.	Start with a clear question to be answered, but can also involve general discussion of a subject; i.e., a topical approach.
Searching for relevant studies	Strive to locate all relevant published and unpublished studies, fully reported, to impact of publication and other biases. Comprehensive; high-recall search for published and unpublished material, fully reported, explicit search strategy; uses several evidence sources/databases.	Do not usually attempt to locate all relevant literature. Searches for pivotal papers known to the subject expert. Not usually specified, potentially biased.

	Systematic Reviews	Traditional Narrative Reviews
Deciding which studies to include and exclude	Involve explicit description of what types of studies are to be included to limit selection bias on behalf of the reviewer; explicit inclusion and exclusion criteria for primary studies; tables reporting salient features of each article with expert synthesis, discussion and agreement by two or more reviewers.	Not usually specified, potentially biased; seldom reported
Assessing study quality	Methodology of the primary articles/ studies is assessed; rigorous critical appraisal; meta-analysis resulting in a pooled estimate of intervention effectiveness (not done in all systematic reviews).	Seldom reported and if reported not usually systematic

	Systematic Reviews	Traditional Narrative Reviews
Teams	Two or more topical experts Partners in above process, and collaborate in review to prevent bias. Epidemiologist Provides methodological oversight, ensures process quality for entire project. Statistician If you are doing a meta-analysis Librarian Provides methodological oversight, ensures process quality for information search process. One person experienced with conducting and publishing systematic reviews Consider an advisory group: policy makers, service organization, patient populations, etc.	You ... with possible input from co-authors, colleagues, mentors, etc.
Timeline	12-18 months (on average) "…to find out about a healthcare intervention it is worth searching research literature thoroughly to see if the answer is already known. This may require considerable work over many months…"	2 - 3 weeks

The Cochrane Collaboration



Preparing, maintaining and disseminating systematic reviews of the effects of health care

http://cochrane.org/consumers/docs/01Cochrane5min.ppt

The Cochrane Library

http://www.cochranelibrary.com

- Cochrane Database of Systematic Reviews (CDSR)
- Database of Abstracts of Reviews of Effectiveness (DARE)
- Cochrane Central Controlled Trials Register (CENTRAL)
- Cochrane Database of Methodology Reviews
- Cochrane Methodology Register (CMR)
- About the Cochrane Collaboration
- Health Technology Assessment Database (HTA)
- NHS Economic Evaluation Database (NHS EED)

Steps involved for a Review	Systematic Review	Narrative Review
1. Establish team, develop answerable research question	☒	☒
2. Check for recent reviews/systematic reviews	☒	☒
3. Agree on specific inclusion and exclusion criteria	☒	
4. Develop systems to organize data & notes, timelines	☒	☒
5. Devise search methods	☒	☒
6. Launch and track exhaustive search	☒	
7. Organize search results	☒	☒
8. Reproduce search results	☒	
9. Review data at 3-4 levels (title, abstract, article, supplemental material) to assess relevance, quality	☒	☒
10. Abstract data into a standardized format	☒	☒
11. Assess the quality of the data, summarize the evidence, interpret the findings. Suggest directions for future research to fill gaps in research base	☒	☒
12. If you are doing a meta-analysis, synthesize data using statistical methods. If there is too much heterogeneity between the studies, sub-group meta-analysis may be feasible	☒	

5 steps to a successful literature search

1. Identify **key concepts** and **think of synonyms** for each concept.

   Watch this tutorial to learn more about key concepts.

2. Build search statements using **AND**, **OR**, and sometimes **NOT**.

   Use AND to narrow your search and OR to broaden it.

   - Learn more by watching this tutorial on Boolean operators.

5 Steps to a successful literature search

3. Choose the **right databases and resources** to search.
   - PubMed and CINAHL are good starting points for peer-reviewed research articles.
   - Check the references of the articles that come up
   - Consider books and e-books for background information.

4. Use **search tips or help files** in the database.
   - Each database searches differently. Some have a thesaurus and some use keywords.
   - PubMed and CINAHL have limits for language, patient age, publication type, date, and more.

5. Ask a Librarian if you get stuck or need any help! https://www.library.ucsf.edu/contact

Remember.....

1. Before you start searching in earnest you should write a **detailed research question**, determine the inclusion and exclusion criteria for your search, develop search terms, run a preliminary search, and have 2-4 articles that already fit the criteria for your review.
2. For a systematic literature review, what is searched depends on the topic of the review but should include...
   - At least 3 standard medical databases like PubMed/Medline, CINAHL, Embase, etc..
   - At least 3 grey literature resources like Clinicaltrials.gov, SIGLE, ProQuest Dissertations, etc...

Tip

- Without a well-developed research question, the researcher may search for wrong, irrelevant, or unnecessary information. This will be a barrier to identifying the potential significance of the question.

A = Alternate Search terms

- Term generation process might include:
  - Alternate terms, spellings (gynecology vs gynaecology), archaic terms
  - Acronyms & what they stand for
  - Anatomical area, symptoms, diagnostic criteria
  - Products, chemicals, microorganisms, registry numbers, etc.
- NOTE: After asking the research question, this is most important part of the process.
- TIP: Have team brainstorm terms, then search for more, have team review added terms.

Sample search string for systematic review on sperm washing to prevent HIV

PubMed/Medline

Search Number	Search	Items Found
#6	#1 and #4 and #5	86
#5	randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized controlled trials[MeSH] OR random allocation[MeSH] OR double-blind method[MeSH] OR single-blind method[MeSH] OR clinical trial[pt] OR clinical trials[MeSH] OR ("clinical trial"[tw]) OR ((singl*[tw] OR doubl*[tw] OR trebl*[tw] OR tripl*[tw]) AND (mask*[tw] OR blind*[tw])) OR random*[tw] OR research design[mh:noexp] OR prospective studies[MeSH] OR control*[tw] OR volunteer*[tw] OR observational[tw] OR non-random*[tw] OR nonrandom*[tw] OR before after study[tw] OR time series[tw] OR cohort*[tw] OR cross-section*[tw] OR prospective*[tw] OR retrospective*[tw] OR research design[mh:noexp] OR follow-up studies[MeSH] OR longitud*[tw] OR evaluat*[tiab] OR pre-post[tw] OR (pre-test[tw] AND post-test[tw]) NOT (animals[MeSH] NOT human[MeSH])	5899275
#4	#2 AND #3	1811
#3	((spermatozoa[MeSH] OR sperm*) AND wash*[tiab]) OR sperm cell separation [tiab] OR processed sperm [tiab] OR processed semen [tiab] OR (semen AND wash* [tiab]) OR ((spermatozoa[mesh] OR sperm*) AND (centrifugation, density gradient [mesh] OR gradient density method [tiab])) OR ((spermatozoa[mesh] OR sperm*) AND (swim* up[tiab])) OR ((semen[mesh] OR semen[tiab] OR seminal[tiab]) AND (RNA[tiab] OR DNA[tiab]))	6485
#2	reproductive techniques, assisted[mesh] OR (reproductive[tiab] AND techn*[tiab] AND assist*[tiab]) OR assisted reproduction[tiab] OR insemination, artificial[mesh] OR insemination, artificial, homologous[mesh] OR artificial insemination*[tiab] OR (artificial*[tiab] AND inseminat*[tiab]) OR fertilization in vitro[mesh] OR (in vitro[tiab] AND fertili*[tiab]) OR ectogenesis [mesh] OR sperm injections, intracytoplasmic [mesh] OR (ET[tiab] AND embryo*[tiab]) OR IVF[tiab] OR IVF-ICSI [tiab] OR ICSI [tiab] OR microinjections [mesh] OR embryo implant*[tiab] OR embryo transfer[tiab] OR (intrauterine[tiab] AND insemination*[tiab]) OR (intra uterine[tiab] AND insemination*[tiab]) OR IUI treatment[tiab]	86530
#1	HIV infections[mesh] OR HIV[mesh] OR hiv[tiab] OR hiv-1*[tiab] OR hiv-2*[tiab] OR hiv1[tiab] OR hiv2[tiab] OR hiv infect*[tiab] OR human immunodeficiency virus[tiab] OR human immunedeficiency virus[tiab] OR human immune-deficiency virus[tiab] OR human immune-deficiency virus[tiab] OR ((human immun*) AND (deficiency virus[tiab])) OR acquired immunodeficiency syndrome[tiab] OR acquired immune-deficiency syndrome[tiab] OR acquired immune-deficiency syndrome[tiab] OR ((acquired immune*) AND (deficiency syndrome[tiab])) OR "sexually transmitted diseases, viral"[mh]	318953

Zafer M, Horvath H, Mmeje O, van der Poel S, Semprini A, Rutherford G, **Brown JM.** Effectiveness of semen washing to prevent human immunodeficiency virus (HIV) transmission and assist pregnancy in HIV-discordant couples: a systematic review and meta-analysis. Fertility and Sterility. 2015 Dec 11

Group Exercise #2

- Define key search terms for your research question
- Define alternative search terms
- Define inclusion and exclusion criteria for the search (e.g., study designs, language)
- Do a preliminary literature search on Pubmed
- Is your search feasible?
- What modifications should you make to your search?
- Is there enough literature to do a useful systematic review of the existing literature or will you plan to do a new study?

Sources of Search Strategies

- Search the Methods section of existing systematic reviews.
- *Warning:*
  - Many articles published as systematic reviews may have modified the process.
  - Many articles published as systematic reviews may not include a replicable search methodology.
  - Some articles published as systematic reviews may not actually be systematic reviews.

Software

1. **Citation Management (EndNote) –** You will need a citation management system like EndNote to handle the large number of citations that you will need to deal with.

2. **Writing** RevMan allows you to prepare the text, build the tables showing the characteristics of studies and the comparisons in the review, and add study data. It can perform meta-analyses and present the results graphically.

Documenting your search strategy

1. Databases searched
2. Name of host/database vendor/system; i.e., search engine
3. Date the search was performed
4. Years covered by the search
5. Complete search strategy for each database searched, including Limits not enumerated elsewhere, whether the term was major, minor, key-word, etc.
6. One or two sentence summary of the search strategy
7. Language restrictions
8. Follow **PRISMA** guidelines for writing up your systematic review (Preferred Reporting Items for Systematic Reviews and Meta- Analyses)

Staying organized

1. **Plan Ahead**
   - Decide as a team **what tools** to use to stay organized. If your team includes people you do not have physical access to, consider using tools **in the cloud** that will offer the opportunity to easily collaborate on single documents as opposed to emailing back and forth and thus having to track several revised versions of the same document.

Staying Organized (cont.)

2. **Reproducibility**
   - The goal is to keep records in the most systematic way possible so that all of your work can be reproduced. That means you should **keep detailed records of the exact search** you used for each database and that all your searches should have an end date so that the results can be reproduced exactly every time.

Staying organized (cont.)

3. **Keep…**

   a. detailed records of each search in addition to saving searches in your personal accounts (like your My NCBI account in PubMed)

   b. all your citations in a citation management program (like **EndNote**) so you can easily and quickly manipulate them

   c. a **spreadsheet** organized by article and sub-organized by preliminary inclusion and exclusion criteria to track why you included and excluded articles for more in-depth review

   d. **detailed notes** of in-depth reviews for each article organized by specific criteria

Sample Data Abstraction Tool for Systematic Literature review Page 1

Reference number	
Study ID (Author Year):	
Data abstractor initials:	

Study citation(s):

SCREENING AND INCLUSION

Title Screening

Potential MDA Study? ☐ Yes ☐ No

Abstract Screening

Potential MDA Study? ☐ Yes ☐ No

Full Article Abstraction

Study inclusion criteria for mass drug administration:

Therapeutic dose of antimalarials given: ☐ Yes ☐ No
Drug given to an entire population or well-defined subpopulation: ☐ Yes ☐ No
Drug administered in a coordinated fashion: ☐ Yes ☐ No
Drug administered without prior diagnostic testing or screening: ☐ Yes ☐ No
Population resides in a malaria endemic area pre and post MDA: ☐ Yes ☐ No

Study inclusion criteria based on study design:

Pre-post measurements done: ☐ Yes ☐ No
Reported estimates of at least one outcome of interest: ☐ Yes ☐ No
Not individually randomized trial: ☐ Yes ☐ No

Study included:

Study meets all inclusion criteria: ☐ Yes ☐ No

If yes, continue with data abstraction
If no, describe reason for exclusion:

Characteristics of excluded studies:

Notes:

Sample Data Abstraction Tool for Systematic Literature review Page 2

Study citation(s):\

METHODS:

Study location:

Dates of study:

Malaria endemicity:

Main species of malaria:

Main mosquito vectors:

Entomologic inoculation rate:

Study design: (RCT=Randomized controlled trial; Q-RCT=Quasi-randomized controlled trial; NRCT=Non-randomized controlled trial; CBA=Controlled before-and-after study; PCS=Prospective cohort study; RCS=Retrospective cohort study; HCT=Historically controlled trial; NCC=Nested case-control study; CC=Case-control study; XS=Cross-sectional study; BA=Before-and-after comparison; CR/CS=Case report/Case series)

Description of study design:

Study groups:

PARTICIPANTS

Sample size: (specify how many in intervention and how many in control)

Age groups included:

INTERVENTIONS

MDA characteristics: (include regimen, number of times done, timing and coverage)

Co-interventions:

OUTCOMES

Parasitemia prevalence

Gametocytemia prevalence

Parasitemia incidence

Gametocytemia incidence

Clinical illness incidence

Mortality

Anemia

Adverse events

Sample Data Abstraction Tool for Systematic Literature review Page 3

RISK OF BIAS (YES, NO, UNCLEAR, N/A, + NOTES FOR EACH SECTION)

Adequate sequence generation	
Appropriate allocation concealment	
Appropriate blinding	
Incomplete outcome data addressed	
Free of selective reporting	
Free of recruitment bias	
Free of baseline imbalance	
No loss of clusters	
Correct analysis	
Free of other bias	
Other specify:	

SUB-GROUP/SENSITIVITY ANALYSIS

High quality study (RCT with low risk of bias by above criteria) (Yes/No)	
Moderate quality study (RCT with moderate to high risk of bias by above criteria or observational study with low risk of bias by above criteria) (Yes/No)	
Early outcome measure after MDA (≤6 months) (Yes/No)	
Late outcome measure after MDA (>6 months) (Yes/No)	
Stand-alone MDA (No co-interventions) (Yes/No)	
Use of chloroquine/primaquine for control of *P. vivax* (Yes/No)	
Other specify:	

NOTES

Assessing the Results: Tools

- CONSORT (Consolidated Standards of Reporting Trials)
- ASSERT (A Standard for the Scientific & Ethical Review of Trials)
- EQUATOR (Enhancing the QUAlity & Transparency of health Research)
- SPIRIT (Standard Protocol Items for Randomized Trials)
- QUORUM (Quality of Reporting of Meta-analyses)
- MOOSE (Meta-analysis of Observational Studies in Epidemiology)
- STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)
- … and many more …

Assessing the Results: Evidence Tables

- Levels of evidence
- Participant characteristics
- Study characteristics
- Intervention and outcome measurements
- Results
- Study limitations
- Inclusion/Exclusion criteria

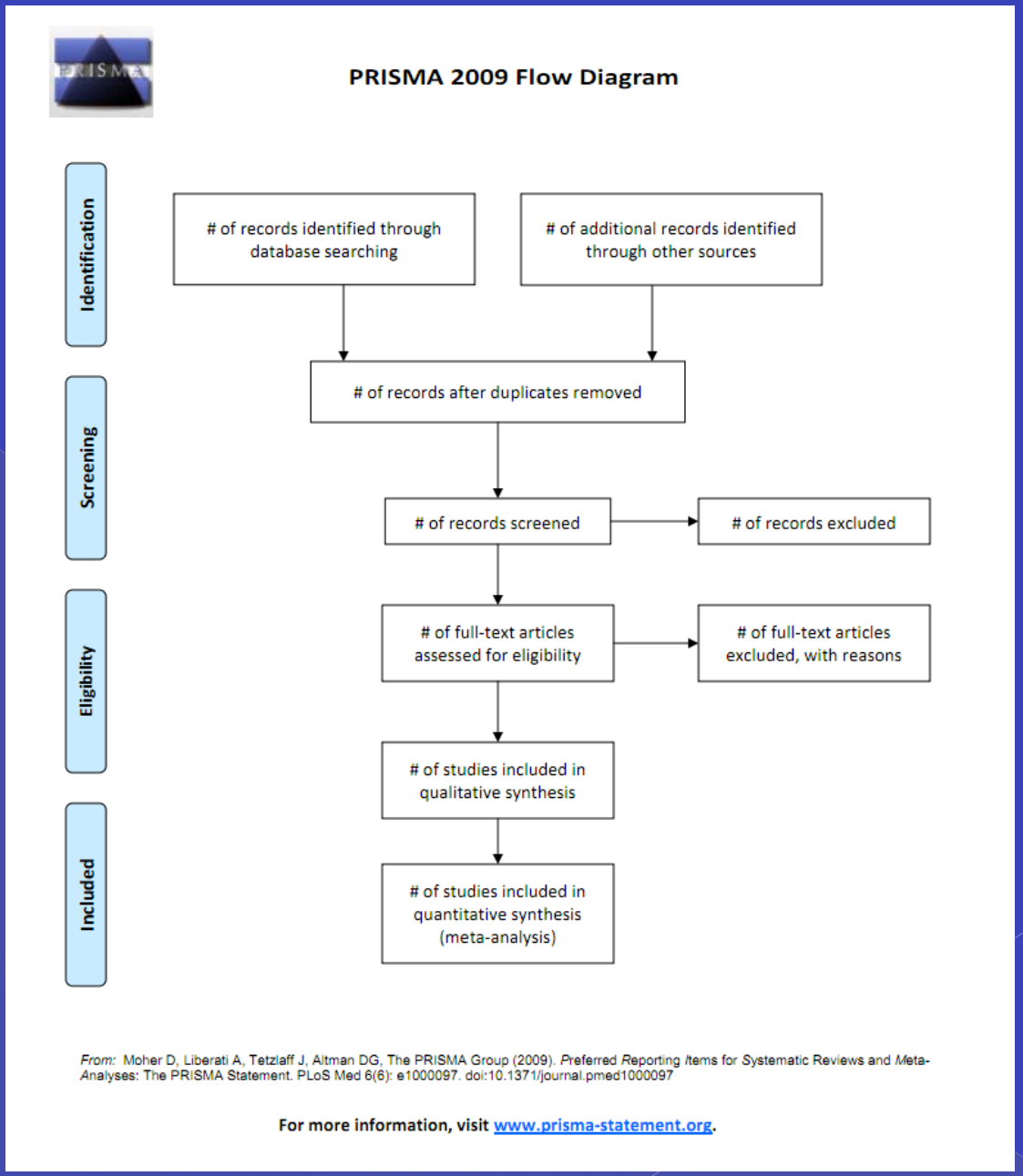
Evidence Table Example

EVIDENCE TABLE TOPIC _____

Author/ Year	Study Objectives	Level/Design/Subjects	Intervention and Outcome Measures	Results	Study Limitations

http://www.aota.org/DocumentVault/AJOT/Template.aspx?FT=.pdf

Clearly Stating the Evidence



http://www.prisma-statement.org/2.1.4%20-%20PRISMA%20Flow%202009%20Diagram.pdf

Useful resources for systematic literature reviews

- Cochrane Resources:
  - Handbook: http://www.cochrane.org/training/cochrane-handbook
  - Guidelines: Armstrong R, et al. Guidelines for Systematic reviews of health promotion and public health interventions. Version 2. Melbourne University: Australia.Oct 2007
- A comprehensive book:
  http://www.amazon.com/Systematic-Reviews-Health-Care-ISBN/dp/B001G4A8P6/ref=sr_1_9?ie=UTF8&qid=1359135243&sr=8-9&keywords=systematic+reviews
- A powerpoint presentation:
  http://powershow.com/view/dc095-MTllN/Conducting_systematic_reviews_of_public_health_and_health_promotion_interventions_powerpoint_ppt_presentation
- An example of a good systematic review:
  DiCenso *et al.* Interventions to reduce unintended pregnancies among adolescents: systematic review of randomised controlled trials. BMJ 2002
- Publication on useful tips for writing a systematic review:
  Pautasso M. Ten Simple Tips to writing a systematic review. PLOS Comuptational Biology July 2013

Designing a secondary analysis

Purpose of a Secondary Analysis

- "In the broadest sense, analysis of data collected by someone else for a different purpose"
- In contrast to primary data analysis in which the same individual/team of researchers designs, collects, and analyzes the data
- What is the difference between secondary aims/ objectives and secondary analysis?
- Quantitative or qualitative data

Secondary Analyses

Advantages	Disadvantages
Study design and data collection already completed – Saves time and money • Access to international data that would otherwise take several years and millions of dollars to collect • Ideal for busy clinic units! • Data sets often contain thousands of variables	Study design and data collection already completed • Data may not facilitate particular research question • The goals and purpose of original research may bias the secondary analysis • Dataset may not contain key variables (e.g. exposure, outcome, confounders,)
Data may be of higher quality • Studies funded by the NIH Networks generally involve larger samples that are more representative of the target population (greater external validity!) • Oversampling of low prevalence groups/behaviors allows for increased statistical precision	Data may potentially lack depth • Constructs may be operationally defined by a single question which can lead to reliability and validity concerns

Nine tips to doing a secondary analysis

1. Write a brilliant research question!
2. Search the literature
3. Familiarize yourself with the original study and data sources
   - To whom are the results generalizable
   - Review the protocol, questionnaires, key MOP/SOPs to know if the data you need are available
   - Exposure or control may change over time
4. Refine your research question, if needed
5. Create an abbreviated codebook with the variables of interest (e.g. HIV incidence, PrEP adherence, gender, age, etc.)

Nine tips to doing a secondary analysis (cont.)

6. Work with statistician to develop appropriate statistical analysis and create table shells.

7. Request variables and tables from the data center

8. Interpret your data

    Be cautious when interpreting statistical significance (p-values) ….large studies/sample sizes can yield associations that are significant but not clinically meaningful

9. Structure your analysis and presentation of findings in a way that is clinically meaningful

Helpful resource for doing a secondary analysis

Table 1. A Practical Approach to Successful Research with Large Datasets

Steps	Practical advice
(1) Define your research topic and question	(1) Start with a thorough literature review (2) Ensure that the research question has clinical or policy relevance and is based on sound a priori reasoning. A good question is what makes a study good, not a large sample size (3) Be flexible to adapt your question to the strengths and limitations of the potential datasets
(2) Select a dataset	(1) Use a resource such as the Society of General Internal Medicine's Online Compendium (www.sgim.org/go/datasets) (Table 3) (2) To increase the novelty of your work, consider selecting a dataset that has not been widely used in your field or link datasets together to gain a fresh perspective (3) Factor in complexity of the dataset (4) Factor in dataset cost and time to acquire the actual dataset (5) Consider selecting a dataset your mentor has used previously
(3) Get to know your dataset	(1) Learn the answers to the following questions: •Why does the database exist? •Who reports the data? •What are the incentives for accurate reporting? •How are the data audited, if at all? •Can you link your dataset to other large datasets? (2) Read everything you can about the database (3) Check to see if your measures have been validated against other sources (4) Get a close feel for the data by analyzing it yourself or closely reviewing outputs if someone else is doing the programming
(4) Structure your analysis and presentation of findings in a way that is clinically meaningful	(1) Think carefully about the clinical implications of your findings (2) Be cautious when interpreting statistical significance (i.e., p-values). Large sample sizes can yield associations that are highly statistically significant but not clinically meaningful (3) Consult with a statistician for complex datasets and analyses (4) Think carefully about how you portray the data. A nice figure sometimes tells the story better than rows of data

Smith et al. Conducting High-Value Secondary Dataset Analysis: An Introductory Guide and Resources. J Gen Intern Med 2011


CANCER RESEARCH LAB
this new guy is driving me crazy talking on the phone day and night!! Quick... Let me bum a cigarette?!!
HACK cough cough
CELLULAR PHONES
CAFFEINE
TOBACCO
GAMBLE ©1993 THE FLORIDA TIMES-UNION KING FEATURES SYNDICATE

Thank you and happy researching!

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