Preparation for a systematic review

APHA 2015

LI 1008.0: Systematic Reviews

Chicago, IL

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Presenter Disclosures

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The following personal, professional, or financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose
Presenter Disclosures

Helena VonVille

The following personal, professional, or financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose
Objectives

At the end of this session, you will be able to:

- Describe how to find existing systematic reviews
- Demonstrate ability to formulate an answerable question
- Formulate inclusion and exclusion criteria for use in systematic reviews
- Explain the importance of the protocol to a successful systematic review
## Selected tasks during protocol development

### Investigators
- Create protocol using PRISMA-P guidance (Moher 2015, Shamseer 2015)
- Deliver exemplar articles on SR topic to librarian
- Feedback to librarian on preliminary search results

### Librarian
- Search for existing SRs, SR protocols on topic
- Develop preliminary search for protocol
  - Identify concept terminology, test it for inclusion

### Joint tasks
- Choose databases to search
- Choose grey literature sources to search
- Consider, choose search filters
Initial Steps in Planning a Systematic Review

- **1: Identify existing systematic reviews**
- **2: Formulate an answerable question**
- **3: Define inclusion and exclusion criteria**
- **4: Register your systematic review protocol**
Relevant PRISMA-P Item

- Describe the rationale for the review in the context of what is already known
1: Why Search for Prior Systematic Reviews

- Avoid wasting time duplicating existing review (see reasons for rejection)
- Understand gaps in the SR literature you can fill
- Get search strategy ideas
1. Search Approach

- Keep it simple
- 1-2 main concepts of your topic, not exhaustively developed
- Use SR filter to limit retrieval as needed
- Look for both completed SRs and protocols for SRs in progress
1. Where to Look

- **PubMed or MEDLINE**
  - SRs from journal articles, Cochrane SRs included
  - Protocols for SRs published as journal articles
  - Supplement with other literature databases as needed (Embase, specialty databases)

- **Cochrane Library ($) or Cochrane Collaboration website**
  - Find Cochrane SR protocols (not in PubMed)

- **PROSPERO**
  - Protocols only
  - [http://www.crd.york.ac.uk/PROSPERO/](http://www.crd.york.ac.uk/PROSPERO/)

- **Government health agencies**
  - NICE (UK) [https://www.nice.org.uk/guidance/](https://www.nice.org.uk/guidance/)
1: Search for Prior Systematic Reviews

1: Search for topic

**Search results**

**Items: 1 to 20 of 1816**
1. Narrow with Systematic Review Filter
Getting SR filters for other databases

The InterTASC Information Specialists' Sub-Group Search Filter Resource

The InterTASC Information Specialists' Sub-Group (ISSG) is the group of information professionals supporting research groups within England and Scotland providing technology assessments to the National Institute for Health and Care Excellence (NICE) and other associated Information Specialists.

The InterTASC Information Specialists' Sub-Group Search Filter Resource is a collaborative venture to identify, assess and test search filters designed to retrieve research by study design or focus. The Search Filters Resource aims to provide easy access to published and unpublished search filters. It also provides information and guidance on how to critically appraise search filters, study design filters in progress and information on the development and use of search filters. Inclusion of a search filter is not an endorsement of its validity or a recommendation.

The editorial team comprises Julie O’Connor (York Health Economics Consortium), Carol Lefebvre (Lefebvre Associates Ltd) and Kath Wright (Centre for Reviews and Dissemination).

Monthly updates are undertaken to identify search filters for the Resource.

The search filters are grouped by study design or focus:

- Advantages and disadvantages of systematic reviews
- Systematic reviews
- Economic evaluations
- Meta-analyses
- Systematic reviews
- Randomized controlled trials
- Case-control studies
- Systematic reviews
- Other filters

For example:

- Witczynski NL, Haynes RB. Hodges Team. EMBASE search strategies achieved high sensitivity and specificity for retrieving methodologically sound systematic reviews, Journal of Clinical Epidemiology 2007;60(1):29-33 (Ovid)
- BMJ Clinical Evidence strategy [updated] (Ovid)
- CADTH strategy [2014] (Ovid)
- SIGN strategy [undated] (Ovid)
1: Search for Prior Systematic Reviews
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Searched for HIV in all fields

Possible status: Ongoing, Completed, Published, Abandoned
Initial Steps in Planning a Systematic Review

1: Identify existing systematic reviews
2: Formulate an answerable question
3: Define inclusion and exclusion criteria
4: Register your systematic review protocol
2. Relevant PRISMA-P Items

- Avoid publication rejection for ill-defined or unfocused topic
- Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)
  - PECOT: alternative to PICO
## 2: PICO Matrix

<table>
<thead>
<tr>
<th>Population</th>
<th>Intervention</th>
<th>Comparison / Control</th>
<th>Outcome</th>
<th>Question / Study</th>
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"The goal of all epidemiological studies is to measure (& compare) the occurrence of outcomes in (different) populations (EGO compared with CGO)."

# 2: Common Types of Questions

<table>
<thead>
<tr>
<th>Question type</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>Therapy / Treatment</td>
<td>Determine effect of interventions on patient (symptoms, function, morbidity, mortality, cost, etc)</td>
</tr>
<tr>
<td>Harm / Etiology</td>
<td>Ascertaining effects of potentially harmful agents (or therapies) on patient outcomes</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Establishing power of a test to differentiate between those with and without a condition or accuracy of tests</td>
</tr>
<tr>
<td>Prognosis</td>
<td>Estimating a patient’s likely course over time</td>
</tr>
<tr>
<td>Clinical Examination</td>
<td>How to properly gather and interpret findings from history and physical exam</td>
</tr>
<tr>
<td>Prevention</td>
<td>How to reduce chance of disease by identifying and modifying risk factors and how to diagnose early through screening</td>
</tr>
<tr>
<td>Cost-Analysis</td>
<td>How to compare costs and consequences of different treatments and tests</td>
</tr>
<tr>
<td>Prevalence</td>
<td>Determine the extent of a condition throughout population</td>
</tr>
</tbody>
</table>
#2: Setting Study Type Criteria

<table>
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<tr>
<th>Type of Question</th>
<th>Type of Study</th>
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<tbody>
<tr>
<td>Therapy / Treatment</td>
<td>RCT &gt; Cohort &gt; Case Control &gt; Case Series</td>
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<tr>
<td>Harm / Etiology</td>
<td>RCT &gt; Cohort &gt; Case Control &gt; Case Series</td>
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<td>Diagnosis</td>
<td>Prospective, blind comparison to gold standard or Cross Sectional</td>
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<td>Prognosis</td>
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<td>Prevention</td>
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<tr>
<td>Cost-Analysis</td>
<td>Economic Analysis</td>
</tr>
<tr>
<td>Prevalence</td>
<td>RCT &gt; Cohort &gt; Case Control &gt; Qualitative</td>
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2: Populating a PICO Matrix

There has been growing concern over the association between poor glycemic control and poor outcomes following cardiac surgery (in non-diabetic as well as diabetic patients). In hopes of improving patient outcomes, bringing down postoperative complication and mortality rates, and decreasing length of stay in the hospital, you are investigating changing practices in order to improve glycemic control in cardiac surgery patients.

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2: Initial Matrix, Question

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</thead>
<tbody>
<tr>
<td>Cardiac Surgery Patients</td>
<td>Glycemic Control</td>
<td>Tight, Regular, Standard of Care</td>
<td>Length of Stay, Mortality, Complications</td>
<td>Therapy / RCT</td>
</tr>
</tbody>
</table>

In cardiac surgery patients, does glycemic control improve outcomes?

PICO helps to pick out search terms – general rule of thumb is to start a search with Population, Intervention, and Study Design
#2: Exercise

Recent research has shown that many young people are not concerned about becoming infected with HIV. From 2008-2011, rate of diagnoses of new HIV infections increased in people aged 13-29. In all other age ranges, rates remained stable or decreased. There is an urgent need for young newly diagnosed people to get and adhere to proper medications both for their own health, and to help reduce transmission to others. You are asked to explore the issue by conducting a systematic review.

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Initial Steps in Planning a Systematic Review

1: Identify existing systematic reviews
2: Formulate an answerable question
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3. Relevant PRISMA-P Item

- Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review
3. Define Inclusion and Exclusion Criteria: Example

- To be included in this review, the study must evaluate the impact of chronic pain on patient’s response to opioid addiction treatment.
- The study must have provided a comparison of response to treatment outcomes (for example, continued opioid abuse, general physical health) between patients with and without chronic pain.
- We also require the studies to have evaluated patients on an OST for opioid addiction. We will not place any restrictions on the types of OST or measurement of chronic pain.
- All study designs will be accepted into this review, (that is, randomized controlled trials, observational studies, or qualitative studies).
- No restrictions were placed on socioeconomic, geographic, or ethnic backgrounds of participants for this review.
- To be eligible for inclusion, all studies must be primary (original research in patients with pain, no secondary reporting), completed (no interim analyses will be allowed in this review), and performed in a human population.

3: Exercise

- Please create at least 4 inclusion and 4 exclusion criteria for your question.
Initial Steps in Planning a Systematic Review

1: Identify existing systematic reviews
2: Formulate an answerable question
3: Define inclusion and exclusion criteria
4: Register your systematic review protocol
Reasons for Rejection

- Did not register the systematic review protocol
4: PROSPERO: Registration site for SRs

http://www.crd.york.ac.uk/PROSPERO/
Sample protocol

Citation

Review question(s)
To assess whether antiretroviral agents used for HIV treatment or prevention are associated with an increased likelihood of engaging in sexual or injecting risk-taking behaviour, or sexually transmitted infection (STI) incidence.

Searches
Electronic database searches will be performed using PubMed MEDLINE, EMBASE, LILACS, the Cochrane Library (CENTRAL and DARE), and PsycINFO.
Search terms and syntax will include combinations of free text and medical subject heading terms where available.
Multiple search terms will be used reflecting three categories:
1. Combination antiretroviral therapy (cART) variables;
2. HIV/AIDS disease variables; and
3. Outcome variables:
   a. Sexual risk-taking variables
   b. Injecting drug use variables
   c. STI incidence variables
   d. HIV incidence (for studies of cART as prevention).
A citation search on the reference lists of all relevant articles and reviews will be conducted.
Efforts will be made to find unpublished and ongoing research presented at international HIV/AIDS conferences, given previously documented systematic differences between unpublished and published material.

Types of study to be included
Experimental, quasi-experimental or observational studies.

Condition or domain being studied
Combination antiretroviral therapy (cART) is used to treat or prevent Human Immunodeficiency Virus (HIV) infection. Increasing access to cART and its application in biomedical prevention strategies may lead to changes in risk-taking behaviour. We aim to investigate any effect of cART use on sexual or injecting behaviour change and incident sexually transmitted infections.

Participants/ population
Inclusion criteria: HIV-seropositive people, or HIV-seronegative people at high-risk of HIV exposure, over 16 years of age.

Intervention(s), exposure(s)
The use of any antiretroviral agent, either alone or in combination, for either treatment of HIV infection or to prevent HIV-seroconversion.
Studies will be excluded if they: 1. measure beliefs about cART use rather than actual use; or 2. report perceived or predicted behavioural change rather than actual behaviour.
References

