Flinders UNIVERSITY

INSPIRING ACHIEVEMENT

Systematic Review Fact Sheet

Conceptualising the search

This fact sheet is one of a series available that discusses systematic reviews, methodology, searching and sources. For research assistance contact the Flinders University Library

Formulating the question

The systematic review question is formulated a priori and tested during the scoping phase.
A standard formula for structuring the review question is PICO(S) for quantitative questions and SPIDER for qualitative ones.

Watch the video – Search Smart - PICO.

PICOS for quantitative questions

P	I	C	O	S
Patient, Population, or Problem	**Intervention (or exposure)**	**Comparison (or control)**	**Outcomes of interest**	**Study designs**
Who are the patients or population groups of interest? What is the problem?	What is being done to them? How frequently? By what means? What are they exposed to?	Are we comparing the intervention to something else? A control? A placebo? Another treatment? No intervention?	Which measurable outcomes are relevant to our question? (both positive and negative)	Which study designs (e.g. RCT) are appropriate for answering my question?

An example PICOS

Is high dose amoxicillin more effective than a watch-and-wait approach to treating children with otitis media (middle ear infection)?

Population: Children with otitis media.

Intervention: Amoxicillin (high dose).

Comparison: Doing nothing (a watch-and-wait approach).

Outcome(s): Clinical cure at the end of treatment (i.e. bacterial eradication), time to cure, adverse side-effects.

Study design(s): A Randomised Controlled Trial (RCT) would be the strongest design for answering an interventional therapy question of this type.

SPIDER for qualitative questions

S	PI	D	E	R
Sample	**Phenomenon of Interest**	**Design**	**Evaluation**	**Research type**
Who are the people you are interested in studying?	What do you hope to understand? It is a behaviours, attitudes, beliefs, or individual experience?	What research methods or theoretical frameworks are appropriate?	What outcome measures are you interested in?	Three apply here: qualitative, quantitative, and mixed methods.

An example SPIDER

What are the challenges faced by mothers living with multiple myeloma in remote and rural areas of Australia?

Sample: Mothers living with multiple myeloma.

Phenomenon of Interest: Challenges and barriers encountered by virtue of living remotely in Australia.

Design: Questionnaires, surveys, interviews, focus groups, case studies, or observational studies.

Evaluation: Views, experiences, opinions, attitudes, perceptions, beliefs, feelings, knowledge, or understanding.

Research type: Qualitative or mixed methods.

The Logic Grid

From PICO to a Logic Grid

Once you have clarified your question by creating a PICOS or SPIDER structure for it, transfer the significant concepts in your PICO/SPIDER to a Logic Grid.

The Logic Grid will help you:

- identify the concepts in your question which need to be searched on for your search to have a minimum level of precision
- clarify which concepts can be left out of the search, or added later if required to improve precision
- prepare for finding appropriate and useful synonyms, acronyms, variant spellings etc. for each concept.

Watch the video for how to translate a PICO to a logic grid

An example from PICOS to a Logic Grid

Patient, population, or problem	Intervention	Comparison	Outcomes of interest	Appropriate study designs
Patients with Coronary Artery Disease (CAD)	Participation in a cardiac rehabilitation programme	No participation in a cardiac rehabilitation programme	Improved health-related quality of life (QoL): • Return to work • Resumption of social activities • Improved physical functioning and/or mental wellbeing	RCTs

Concept 1	Concept 2
Coronary Artery Disease	Cardiac rehabilitation

Relevant Study Designs

The study designs best suited for answering your question will depend on the type of question being asked.

Common question types:

- Therapy: how to select treatment to offer patients that do more good than harm and that are worth the efforts and costs of using them.
- Diagnosis: how to select and interpret diagnostic tests in order to confirm or exclude a diagnosis, based on considering their specificity, sensitivity, likelihood ratios, expense, safety, etc.
- Prognosis: how to estimate the patient's likely clinical course over time and anticipate likely complications of disease.
- Etiology/Harm: how to identify causes for disease.
- Prevention: how to reduce the chance of disease by identifying and modifying risk factors and how to diagnose early by screening.
- Qualitative: how is the person experiencing what is happening to them? What are their perceptions, beliefs, attitudes?

Best designs for specific question types:

Type of Question	Best Type of Study
Therapy	RCT -> cohort -> case control -> case series
Diagnosis	Prospective, blind comparison to a gold standard
Etiology/Harm	RCT -> cohort -> case control -> case series

Type of Question	Best Type of Study
Prognosis	Cohort study -> case control -> case series
Prevention	RCT -> cohort study -> case control -> case series

Methodological search filters for limiting a search by study design

- Cochrane Highly Sensitive Search Strategy for identifying randomized trials includes versions for OvidSP Medline and PubMed.
- Hedges by Health Information Research Unit, McMaster University includes search filters (or 'hedges') available for a range of databases. These include filters for therapy, diagnosis, prognosis, qualitative, cost, economics, and etiology questions.
- ISSG Search Filters Resource, a compendium of methodological search filters. Produced by the InterTASC Information Specialists' Sub-Group (ISSG) in the UK.
- PubMed Clinical Queries, a search facility within PubMed for restricting searches to specific clinical study categories. Includes a filter for systematic reviews (very broad in scope).
- Scottish Intercollegiate Guidelines Network (SIGN) search filters includes filters for systematic reviews, RCTs, controlled trials, observational studies, diagnostic studies, economic studies, and studies investigating patient issues.