

Developing a research question

The research question

- The research question for a systematic review should specify the types of population (participants), types of interventions (and comparisons), and the types of outcomes that are of interest.

Selection Criteria

- Type of participants
 - Type of interventions (and comparisons)
 - Type of outcome measures
 - Type of studies
- The acronym PICO (**P**articipants, **I**nterventions, **C**omparisons and **O**utcomes) helps to serve as a reminder of these.

P Types of participants

- How is the disease/condition defined?
- What are the most important characteristics that describe these people (participants)?
- Are there any relevant demographic factors (e.g. age, sex, ethnicity)?
- What is the setting (e.g. hospital, community etc)?
- Who should make the diagnosis?
- Are there other types of people who should be excluded from the review (because they are likely to react to the intervention in a different way)?
- How will studies involving only a subset of relevant participants be handled?

I/C **Types of interventions**

- What are the experimental and control (comparator) interventions of interest
- Does the intervention have variations (e.g. dosage/intensity, mode of delivery, personnel who deliver it, frequency of delivery, duration of delivery, timing of delivery)?
- Are all variations to be included (for example is there a critical dose below which the intervention may not be clinically appropriate)?
- How will trials including only part of the intervention be handled?
- How will trials including the intervention of interest combined with another intervention (co-intervention) be handled?

O **Types of outcomes**

- Primary outcomes are the two or three outcomes from among the main outcomes that the review would be likely to be able to address if sufficient studies are identified, in order to reach a conclusion about the effects (beneficial and adverse) of the intervention(s).
- Secondary outcomes include the remaining main outcomes (other than primary outcomes) plus additional outcomes useful for explaining effects.
- Ensure that outcomes cover potential as well as actual adverse effects.
- Consider outcomes relevant to all potential decision makers, including economic data.
- Consider the type and timing of outcome measurements.

S Types of studies

- Different types of studies have different methodological issues to consider
- May need to consider different statistical analysis techniques according to the type of included studies
- Parallel randomised controlled studies (common in Cochrane systematic reviews) are the 'easiest' inclusions.
- Non-randomised studies may suffer from bias
- Cross-over studies may have issues with wash-out periods
- Studies with multiple sites (eg many fingers measured per person) would need statistical adjustments
- Etc.... beyond the scope of this session

Exercise - PICOS



- Title
- Review question
- Selection criteria (PICOS)

- **Title:** Compression stockings for preventing deep vein thrombosis in airline passengers.
- **Objective:** To assess the effects of wearing compression stockings versus not wearing them for preventing DVT in people travelling on long-haul flights. For the purposes of this review, long-haul flights are defined as flights lasting at least four hours.

- **Types of participants**

Any passenger on a flight of more than four hours continuous duration. Both sexes, all ages, all risk factors, irrespective of any other interventions they may have used for the prevention of DVT. Flights in any direction are eligible, as are both daytime and night-time flights.

- **Types of interventions**

Randomized trials of compression stockings versus no stockings in passengers on flights lasting at least four hours. Trials in which passengers wore a stocking on one leg but not the other, or Those comparing stockings and another intervention were also eligible.

- **Types of outcome measures**

Primary outcomes: Diagnosis of symptomatic or symptomless DVT (by ultrasound, venogram or isotope).

Secondary outcomes: Diagnosis of pulmonary embolus (by ventilation perfusion lung scan, pulmonary angiogram, spiral computed tomography (CT) scanning, or postmortem examination), Death, Superficial vein thrombosis, Oedema, Adverse effects arising from the use of compression stockings.

Review: Compression stockings for preventing deep vein thrombosis in airline passengers

Comparison: 1 Wearing stockings versus not wearing stockings

Outcome: 1 Symptomless deep vein thrombosis

