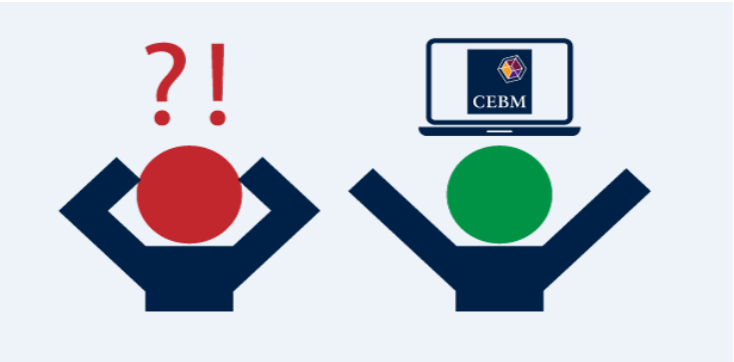
Tip for data extraction for meta-analysis – G6



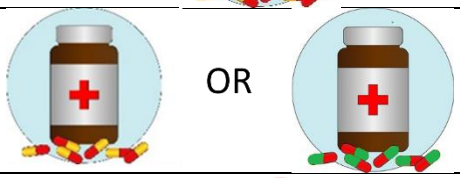
What if there's no intervention?

Kathy Taylor

In my last post, which was a video, I introduced the PICO as the abbreviation for the key elements of a clinical question. In this post I'll highlight other abbreviations that may be used, and also cover the varied use of the PICO abbreviation.

Describing a clinical question

The key elements of a clinical question may be defined by the PICO:

P	Population, Patient or Problem	
I	Intervention	
C	Comparator or Control	
O	Outcome(s)	

Regarding clinical questions in intervention studies, including randomised control trials (RCTs), the intervention will often be a drug or combination of drugs, but could also be another intervention such as a surgical procedure. For the drug-based interventions, the comparator might be a placebo drug (which looks the same as the intervention drug and will be in the same packaging) or a different drug.

The example I gave in my video was a drug intervention study. It was a trial of glucose lowering drugs and had the following PICO:

P – Patients with type 2 diabetes

I – Metformin combined with insulin
C – Placebo combined with insulin
O – Changes in the carotid intima media thickness (primary outcome)

Rather than an intervention, the study might involve an exposure, as in a cohort study. For this, the key elements of the clinical question may be abbreviated by PECO:

P	Population, Patient or Problem	
E	Exposure	
C	Comparator or Control	
O	Outcome(s)	

For example, a retrospective cohort study using data from a database of general practice records considered the relative risks associated with type 2 diabetes of all-cause mortality and cardiovascular mortality in middle aged people. The PECO is

P – Middle-aged patients
E – Type II diabetes
C – Without diabetes
O – All cause mortality, cardiovascular mortality

For diagnostic accuracy studies, we can use another abbreviation, PIRT:

P	Population, Patient or Problem	
I	Index Test	
R	Reference Test	
T	Target Condition	

An example of this is a study of point-of-care testing for heart failure:

P – Primary care patients
I – Point-of-care testing of N terminal fragment pro B-type natriuretic peptide (NT-ProBNP)
R – Clinical examination
T – Heart failure

The PICO, PECO or PIRT for a systematic review will be broader as it will cover multiple studies. For example, the following PIRT refers to the diagnostic accuracy systematic review that included the study described above:

P – Patients in ambulatory care settings
I – Point-of-care testing of B-type natriuretic peptide (BNP) or N terminal fragment pro B-type natriuretic peptide (NT-ProBNP)
R – Echocardiography, clinical examination or a combination of both
T – Heart failure

As I said in the video, the key elements of a clinical question will typically be found in the title and abstract of the article. Note that study questions won't always contain all the elements of a PICO, PECO or PIRT. For example, you may only find a population, exposure and outcome. This is illustrated by a study of the association between sugar-sweetened drinks and colorectal cancer:

P – Female teachers and administrators
E – Consumption of caloric soft drinks, sweetened bottled waters and teas, and fruit drinks
O – Colorectal cancer

Varied uses and extensions of PICO

The PICO and PECO are often combined and referred to as PICO, where I for intervention is broadly defined to encompass a treatment, exposure or prognostic factor.

PICOTT is an extension to PICO, which combines all three abbreviations, adding
T – Type of question (therapy, diagnosis, harm, prognosis or prevention)

T – Type of study (systematic review, cohort study, RCT or case-control)

The PIRT example that I gave above would have the following PICOTT:
P – Patients in ambulatory care settings
I – Point-of-care testing of B-type natriuretic peptide (BNP) or N terminal fragment pro B-type natriuretic peptide (NT-ProBNP)
C – Echocardiography, clinical examination or a combination of both
O – Heart failure
T – Diagnosis
T – Systematic review

Alternatively, for systematic reviews, there's the PICOTS abbreviation:
P – Population/Problem
I – Intervention (broadly defined)
C – Comparison
O – Outcome
T – Timeframe
S – Setting

In the context of systematic reviews of the prediction model performance, the PICOTS is
P – Population in which the prediction model will be used
I – Prediction model
C – Competing models
O – Outcome for which the model is validated
T – Timeframe, for prognostic models
S – Setting

Others remain using PICO but alter its elements according to the type of question.

All the above abbreviations are intended to help define a clinical question. A well-defined question will provide a clear focus for the literature search and will be more likely to provide a useful answer and ensure that research resources are well spent.

Starting with a poorly defined question will more likely produce confusing and unhelpful answers.

Here's a tip…
Abbreviations such as PICO, PECO and PIRT are intended to help clearly define the clinical question for a study or a systematic review.

Dr Kathy Taylor teaches data extraction in Meta-analysis. This is a short course that is also available as part of our MSc in Evidence-Based Health Care, MSc in EBHC Medical Statistics, and MSc in EBHC Systematic Reviews.

Follow updates on this blog, related news, and to find out about other examples of statistics being made more broadly accessible on Twitter @dataextips