

Tips and tricks in performing a systematic review

CHAPTER 4:

Building a PICO search strategy

After identifying keywords that reflect your topic of interest,¹ you need to use them to search for articles by building a 'query' more commonly known as a search string/strategy.

Successful search strategies are usually highly structured and built around a PICO framework. Population Intervention Comparison Outcome (PICO) frameworks help the searcher group search terms into thematic groups. PICO is very good at identifying medical literature where systematic reviewing is common, this is because the medical model of research can typically be defined by; a specific population for example, children; an intervention, for example, exercise regime; the type of comparison, for example, randomised control trial; and outcome, for example, weight control.

If you were to use the following headings and list all other synonyms relating to those headings for example, CHILDREN — paediatric, adolescent, etcetera; EXERCISE — physical activity, dance, sport, etcetera; RCT — randomise, comparison, etcetera; and WEIGHT CONTROL — fat, adiposity, BMI, etcetera, you would end up with four lists of terms. If you took one term from each group and then searched for all four terms in a query you would hopefully retrieve articles relating to an exercise intervention in children where one of the outcomes was weight loss.

The trick with a PICO framework is that it searches for all possible combinations of search terms, if you have five search terms in each group it searches 5!⁴ that is, 207 360 000 combinations. To link the search terms together logical Boolean operators are required. All search terms under one heading are linked by a Boolean

OR, that is, this term or that term, and each group is linked by a Boolean AND, that is, this group of terms and that group of terms.

Fortunately, specific groups of search terms have been identified that locate specific types of literature. One such hedge was pioneered in Cochrane reviews and is used to locate randomised control trials; the Cochrane Highly Sensitive Search Strategy is well documented and widely used.² Other groups of hedges exist and find articles that focus on therapy, diagnosis, review, prognosis, causation (aetiology), economics, cost, clinical prediction guides, and qualitative studies.³

Next Chapter: Implementing a search and managing the results.

Adrian Sayers

REFERENCES

1. Sayers, A. Tips and tricks in performing a systematic review: Reference management and identifying search terms and keywords. *Br J Gen Pract* 2007; 57(545): 999.
2. Glanville JM, Lefebvre C, Miles JN, Camosso-Stefinovic J. How to identify randomized controlled trials in MEDLINE: ten years on. *J Med Libr Assoc* 2006; 94(2): 130–136.
3. The Hedges Project. <http://hiru.mcmaster.ca/hedges/indexHIRU.htm> (accessed 8 Jan 2008).

DOI: 10.3399/bjgp08X277168

Top Tips in 2 minutes

HIV

Over 63 500 adults now live with HIV in the UK. There are over 31 500 GPs. That's about two each — who are yours?

HIV is not confined to London and the major cities, and highly-active antiretroviral therapy has transformed health outcomes. Later diagnosis is related to poorer health, but a significant proportion of people who are diagnosed late with HIV infection have been in contact with healthcare professionals in the preceding year with symptoms which, in retrospect, were likely to be related.

We can make a difference.

Lengthy pre-test counselling is not required, unless a patient requests or needs this. The minimum requirement is to provide an opportunity for pre-test discussion to ensure there is informed patient consent to the test.

HIV is a chronic disease with effective treatment which considerably improves the quality and quantity of life. We won't be able to diagnose it if we do not think about it, nor will we be able to diagnose it if we do not ask about it. We need to become more aware and more comfortable to invite discussion as we would do with any other chronic disease.

The test, if negative, does not need to be disclosed on applications for insurance, so how about it? This top tip helps to make it a more straightforward part of our consultation.

Ruth Bastable
Sarah Rann
Vinny Barker

Acknowledgements

Thanks to Addenbrookes postgraduate medical centre for advice, support, and good humour.

DOI: 10.3399/bjgp08X277177

Top Tips in 2 minutes: HIV.

| | |
|------------------------------|--|
| Why: | <p>There are over 58 000 people with HIV living in the UK</p> <ul style="list-style-type: none"> • As many as one-third have not been diagnosed • The prognosis is good provided that HIV is not diagnosed too late • Spread to others is less likely if the patient is aware of their HIV status |
| How: | <p>Major risk factors</p> <ul style="list-style-type: none"> • Homosexual/bisexual man • From high-risk area of the world such as sub-Saharan Africa • Heterosexual sex with someone from high-risk group • History of injecting drug use <p>For example: You might ask 'are you concerned that you may have put yourself at high risk of HIV?'</p> <p>Common symptoms and signs of primary HIV infection (seroconversion illness)</p> <ul style="list-style-type: none"> • Fever • Malaise • Arthralgia • Maculopapular rash <p>Standard HIV tests may be negative at this stage. Discuss with laboratory if high level of suspicion. Otherwise repeat HIV antibody test 3 months after last risk.</p> <p>'Tell-Tale' signs — HIV infection (prior to profound immunosuppression)</p> <ul style="list-style-type: none"> • Persistent generalised lymphadenopathy (especially axillary and posterior cervical regions) • Troublesome seborrhoeic dermatitis and other severe or hard-to-treat rashes • Recurrent respiratory infections • Shingles <p>'Tell-Tale' signs — late HIV infection</p> <ul style="list-style-type: none"> • Oral candida • Oral hairy leukoplakia (furring on lateral borders of tongue) • All patients with tuberculosis should have an HIV test • Unexplained weight loss/diarrhoea • Wide range of infections of the RS (respiratory system), GIS (gastro-intestinal system), NS (neurological system) • Tumours include Kaposi's (especially skin), lymphoma, Ca cervix |
| What next and when: | <ul style="list-style-type: none"> • Can test in general practice or can refer to GU clinic • Patients at risk of HIV are often at higher risk of other STIs, for example, <i>Chlamydia</i> and hepatitis B • Pre-test discussion (necessary when patient has risk factor or is anxious) <ul style="list-style-type: none"> • Exploration and explanation of degree of risk • Meaning of test (HIV versus AIDS) • Window period of 3 months • Meaning of positive results • Action if positive result — support, follow-up, informing partner(s) • Good prognosis (very successful drugs when become immunosuppressed) • Life insurance only an issue if diagnosed HIV positive • Patient may wish to go away to consider whether to take test • Perform HIV antibody test (result has to be confirmed by multiple confirmatory tests on first sample). When result is given to the patient, this is subject to performing a second blood test for HIV at this time, to ensure no mix-up of samples has taken place • If positive, refer to GU clinic for early appointment and follow up • When prescribing for patients on antiretrovirals, there is a high risk of drug interactions, which may cause regimen to fail http://www.hiv-druginteractions.org (latest on HIV drug interactions) |
| Patient information: | Patient UK http://www.patient.co.uk/showdoc/27000684/ patient information leaflet and lots of links to other sources of help and information |
| Web links/references: | <p>Adler MW. <i>ABC of AIDS</i>. 5th edn. London: BMJ Books, 2001</p> <p>www.hivmedicine.com (online text book, amazing resource and no charge)</p> <p>www.bhiva.org (British HIV Association; publications and detailed guidelines)</p> |
| Who are you: | Dr Chris Carne, Consultant in Genitourinary Medicine, Addenbrooke's Hospital, Cambridge |
| Date: | October 2007 |