How to develop a search strategy for an intervention review

Based on the Peer Review of Electronic Search Strategies (PRESS) criteria*

	PRESS	Guide	Examples
1	**Translation** Is the search question translated well into search concepts?	If possible, structure the search strategy into search concepts (groups of words) according to relevant elements from **PICOS:** • Patient/Population/Problem • Intervention • Comparator • Outcome • Study design (methods filter)	1. Index term(s) for Patient/Population/Problem 2. Text word(s) for Patient/Population/Problem 3. **1 OR 2 (P)** 4. Index term(s) for Intervention(s) 5. Text word(s) for Intervention(s) 6. **4 OR 5 (I)** 7. Publication type(s) 8. Index term(s) for Study design(s) 9. Text word(s) for Study design(s) 10. **7 OR 8 OR 9 (S)** 11. **3 AND 6 AND 10 (P AND I AND S)**
		You might want to omit the **Comparator** and the **Outcome** elements as they are not often described adequately in the title, abstract or indexing.	
2	**Operators** Are there any mistakes in the use of Boolean or proximity operators?	See the database's **help file** to find available operators used to combine individual terms and search concepts	
		AND, OR , NOT, NEXT, NEAR/*n*, adj/*n* are common operators	
		AND between terms or concepts narrows the search	
		OR between terms or concepts broaden the	

		search	
		Use the **NOT** operator with caution – you might 'NOT-out' terms you want to keep	A search for: **private health NOT public health** will exclude papers that are about **private health** <u>and also about</u> **public health**
3	**Subject headings/index terms** Are any important subject headings missing or have any irrelevant ones been included?	**Subject headings** or **index terms** (like **MeSH** used in MEDLINE for example) are terms that describe the **content** of an article – what it is about	• Vaccination • Guidelines as Topic • Randomized Controlled Trials as Topic
		Publication type terms describe what kind of publication the article is	• Guideline • Randomized Controlled Trial
		Check all relevant index terms for each of the databases you will search	
		Some index terms cover the **P** and also the **I** in PICOS, like for example: **Legislation, Drug** where legislation is I and drug is P	1. Legislation, Drug **(I &P)** 2. Index term for drug 3. Text word for drug 4. **2 OR 3 (P)** 5. Index term for legislation/regulation 6. Text word for legislation/regulation 7. **5 OR 6 (I)** 8. Publication type 9. Index term for Study design 10. Text word for Study design 11. **8 OR 9 OR 10 (S)** 12. **1 AND 11** 13. **4 AND 7 AND 11** 14. **12 OR 13 (P AND I AND S)**
		An (assumed) index term (in MeSH for example) that retrieves no records is likely misspelled or is not an index term. It's best to search one term per	PubMed: Counselling[Mesh] [no records retrieved] Counseling[Mesh] [thousands of records retrieved]

		line so errors such as this show up.	
		Use the index terms according to how indexers have described and used the terms for indexing - see **description/scope notes** and **entry terms/used for terms** where provided	**Scope Note** for: Health Manpower The availability of HEALTH PERSONNEL - It includes the demand and recruitment of both professional and allied health personnel, their present and future supply and distribution, and their assignment and utilization. Health Manpower is **Used For:** • health occupations manpower • workforce health • manpower health occupations • health manpower • health workforce • manpower health
		See how **known relevant studies** have been indexed in the databases you will search. Use those index terms to build your search strategy	
		In some databases, broad index terms can be **exploded.** An exploded index term will retrieve records with the index term and also records with narrower index term(s) PubMed explodes index terms automatically, but can be turned off, so that narrower terms are not being search for	• **Education, Continuing** (Broad) - Education, Dental, Continuing (Narrower) - Education, Medical, Continuing (Narrower) - Education, Nursing, Continuing (Narrower) - Education, Pharmacy, Continuing (Narrower) - Education, Professional, Retraining (Narrower)
		In some databases, index terms can be linked to a **subheading**, a specific aspect of an index term – this is best used by advanced search specialists	See an example under Limits, criteria 7
		Use the OR operator to **combine index terms with text words** to find all kinds of records: indexed; not (yet) indexed; with abstract; without abstract;	1. Antimalarials/ 2. antimalarials.ti,ab. 3. anti malarials.ti,ab.

		with creative/uninformative title; with informative title	4. 1 OR 2 OR 3
4	**Natural language** Are any natural language terms or spelling variants missing, or have any irrelevant ones been included?	Natural language terms is the same as **text words**, usually words in record **title** or **abstract**	
		Phrases, or text words that contain more than one word, might or might not need to be enclosed in brackets, or the individual words can be combined with an appropriate proximity operator	Depending on the database provider, the phrase **health care** can be searched as: • health care • "health care" • health NEXT care • health adj care • health NEAR/0 care • health P/0 care
		Some text words can be spelled in more than one way	• behavior OR behaviour • health care OR healthcare
		To find relevant text words: o use words found in title, abstract and author keywords of known relevant papers o consult search strategies used in reviews related to yours o use dictionaries and text books o see databases scope notes and "Used for" terms/Entry terms, if provided	
		Use the OR operator to **combine index terms with text words** (and use truncation as appropriate - see point 5 below) **t**o find all kinds of records: indexed; not (yet) indexed; with abstract; without abstract; with creative/uninformative title; with informative title	1. Antimalarials/ 2. antimalarial*.ti,ab,kw. 3. anti malarial*.ti,ab,kw. 4. 1 OR 2 OR 3

5	**Natural language** Is truncation used optimally?	Using a **truncation** sign at the end of a word will either replace or add characters to the truncated word	Usually, in databases that use an asterisk (*) as truncation sign, a search for **antimalaria*** will retrieve records with **antimalaria**, **antimalarial** or **antimalarials**
		Only text words (not index terms) can be truncated	
		Common truncation signs are: asterisk **(*)** and question mark (**?**) See the database's **help file** to learn which truncation sign can be used and how to use it	
		Depending on the database, a truncation sign can add **none, one** or **more characters**	A text word search for: **consumer?** might find **consumer** and also **consumers** OR – depending on the database provider A text word search for: **consumer?** might only find **consumers**
		Make sure the truncation sign is **'correctly' placed**	**A search for: pharmac*** will (depending on the database provider) retrieve: **pharmacy; pharmacies; pharmacist; pharmacists; pharmaceutical; pharmaceuticals** **A search for: pharmaceutical*** will (depending on the database provider) retrieve **pharmaceutical; pharmaceuticals**
6	**Spelling & syntax** Does the search strategy have any spelling mistakes, system syntax errors, or wrong line numbers?	Misspelled text word will likely retrieve some, but far from all relevant records. In some (rare) cases, decide whether it's worth to also search for **misspelled** terms	**A search for the misspelled text word: midwifes** will miss records on **midwives** **A search for the correct text word: midwives** will miss records misspelled as **midwifes**
		When using brackets make sure they are 'correctly' used. On some databases it is not possible to use the "nested" brackets shown in the	**(private OR (public AND health care))** will retrieve all records on private and also all records on public and health care

		example for searching so check the help file if the search does not appear to be working correctly.	**vs** **((private OR public) AND health care)** will retrieve all records on private and health care and also all records on public and health care
		Make sure individual search lines are correctly grouped, and grouped in accordance with the database searched	A five line search relating to the same concept can (depending on the database provider) be grouped into a sixth line: 1. … 2. … 3. … 4. … 5. … **6.** 1 OR 2 OR 3 OR 4 OR 5 (Ovid) **6.** OR/1-5 (Ovid) **6.** {or #1-#5} (Cochrane Library) **7.** #1 or #2 or #3 or #4 or #5 (Cochrane Library) **6.** S1 OR S2 OR S3 OR S4 OR S5 (EbscoHost) **6.** S1 OR S2 OR S3 OR S4 OR S5 (ProQuest)
7	**Limits** Do any of the limits used seem unwarranted or are any potentially helpful limits missing?	Some databases index records with **Subheadings** in addition to **Subject headings/Index terms.** Subheadings are terms that limit an index term to a specific aspect. Subheadings should be used with caution. A strategy that includes an index term limited with a subheading should preferably, and when possible, combine the index term with subheading (line 1 in the example) with the index term AND'ed with an index term that describes the subheading aspect (line 4 in the example), using OR (line 5 in the	1. Inservice Training/**og [Organization & Administration]** 2. Inservice Training/ 3. "Organization and Administration"/ 4. 2 AND 3 5. 1 OR 4

		example)	
		Time limits should normally be omitted (MECIR C35)	
		Language limits should normally be omitted (MECIR C35)	
		Low and middle income countries (LMIC) Do not limit a search to LMIC if studies from high income countries or about high income countries can inform your topic or be eligible for inclusion	See: The **LMIC Filters** document
		Method filters vary according to databases	**A MEDLINE, Ovid filter-example for EPOC reviews:** 1. randomized controlled trial.pt. 2. controlled clinical trial.pt. 3. pragmatic clinical trial.pt. 4. multicenter study.pt. 5. non-randomized controlled trials as topic/ 6. interrupted time series analysis/ 7. controlled before-after studies/ 8. (randomis* or randomiz* or randomly).ti,ab. 9. groups.ab. 10. (trial or multicenter or multi center or multicentre or multi centre).ti. 11. (intervention? or effect? or impact? or controlled or control group? or (before adj5 after) or (pre adj5 post) or ((pretest or pre test) and (posttest or post test)) or quasiexperiment* or quasi experiment* or evaluat* or time series or time point? or repeated measur*).ti,ab. 12. or/1-11 13. exp Animals/ 14. Humans/

		15. 13 not (13 and 14) 16. review.pt. 17. meta analysis.pt. 18.news.pt. 19. comment.pt. 20. editorial.pt. 21. cochrane database of systematic reviews.jn. 22. comment on.cm. 23. (systematic review or literature review).ti. 24. or/15-23 25. 12 not 24	
8	**Adapted for databases** Has the search strategy been adapted for each database to be searched?	**Databases** (1 and 2 are a minimum according to MECIR C24) 1. Cochrane Central Register of Controlled Trials (CENTRAL part of *The Cochrane Library*. www.cochranelibrary.com 2. MEDLINE 3. Embase (if available) 4. Topic specific databases (Highly desirable according to MECIR C25)	See: The **LMIC Databases** document (might also be relevant for none LMIC reviews)
		Grey literature (database examples) (Mandatory according to MECIR C28) • OpenGrey: www.opengrey.eu/ • Grey Literature Report: www.nyam.org/library/online-resources/grey-literature-report/ • Relevant websites	
		Trials Registries/Ongoing trials (Mandatory according to MECIR C27) • International Clinical Trials Registry Platform (ICTRP), Word Health Organization (WHO) http://www.who.int/ictrp/en/	

		• ClinicalTrials.gov, US National Institutes of Health (NIH) http://clinicaltrials.gov/	
		Citation search Conduct a cited reference searches for all included studies, and other key papers, for example using ISI Web of Science; Google Scholar or other	
9	**Search log**	Keep a **search log** while searching to help inform the reporting of the search process. The log should include: • Database name • Database provider/host • Database time span • Date searched • Records retrieved • All strategies, if possible, as run with number of records retrieved per line This information is required in the search methods / search strategy appendix. Also make a note of web searches including date searched and terms used.	See: The **Search Log Template** document
10	**Reporting the search process**		See: The **How to report the search process in EPOC protocols, reviews, and updates** document

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