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How to develop a search strategy

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 for Patient/Population/Problem 2. Text word for Patient/Population/Problem 3. **1 OR 2 (P)** 4. Index term for Intervention 5. Text word for Intervention 6. **4 OR 5 (I)** 7. Publication type 8. Index term for Study design 9. Text word for study design 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	
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 services and also about public health services
3	**Subject headings/index terms** Are any important subject headings missing or have any irrelevant ones been included?	Subject headings or **index terms** 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 index term that retrieves no records is likely misspelled or is not an index term	
		Use the index terms according to how indexers have described and used the terms for indexing - if provided, see **scope notes** and **used for terms**	**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
		Index terms that seem irrelevant might be relevant after all	
		See how **known relevant studies** have been indexed in the databases you will search and use those index terms to build your search strategy	
		In some databases, broad index terms can be **exploded**, that is, to search the index term and also all or some narrower index term(s)	• **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	See an example under Limits, criteria 7
		To find records without abstract and/or with "creative", but uninformative titles, use the OR operator to **combine index terms with text words**	1. Antimalarials/ 2. antimalarial*.ti,ab. 3. anti malarial*.ti,ab. 4. 1 OR 2 OR 3
4	**Natural language** Are any natural language terms or spelling variants missing, or have any	Natural language terms is the same as **text words**, usually words in record **title** (ti) or **abstract** (ab)	
		Text words that contain more than one word might or might not need to be enclosed in	Depending on the database or database provider, the phrase **health care** can be searched as:

	irrelevant ones been included?	brackets, or the individual words can be combined with an appropriate operator	• 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: ○ use words found in title and abstract of known relevant papers ○ consult search strategies used in reviews related to yours ○ use dictionaries and text books ○ see databases scope notes and Used for terms/Entry terms, if provided	
		To find records that have not been indexed, or not appropriately indexed, use the OR operator to **combine text words with index terms**	1. Antimalarials/ 2. antimalarial*.ti,ab. 3. anti malarial*.ti,ab. 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	
		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 replace/add **none, one or more characters**	A text word search for: **consumer?** might find consumer and also consumers or A text word search for: **consumer?** might only find consumers
		Make sure the truncation sign is **correctly placed**	**A search for: pharmac*** will retrieve: pharmacy, pharmacies, pharmacist, pharmacists, pharmaceutical, pharmaceuticals **A search for: pharmaceutical*** will 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**
		Make sure brackets are correctly used	(private OR (public AND health care)) **vs** ((private OR public) AND health care)
		Make sure individual search lines are correctly grouped and grouped in accordance with the database searched	A five line search can be grouped into a sixth line: **6.** 1 OR 2 OR 3 OR 4 OR 5 **6.** #1 OR #2 OR #3 OR #4 OR #5 **6.** S1 OR S2 OR S3 OR S4 OR S5 **6.** OR/1-5
7	**Limits** Do any of the limits used seem unwarranted or are	Some databases use **subheadings** to index records. Subheadings are terms that limit an index term to a specific aspect. Subheadings should be used with caution. A search using Subheadings	1. Inservice Training/**og [Organization & Administration]** 2. Inservice Training/ 3. "Organization and Administration"/

	any potentially helpful limits missing?	should preferably be used in combination with a search that combine the index term AND the aspect as index term.	4. 1 OR (2 AND 3)
		Time limits should be omitted	
		Language limits should be omitted	
		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
		Methods filters	See: The **Methods Filters** document A collection of methods filters is under way, and will soon be published
8	**Adapted for databases** Has the search strategy been adapted for each database to be searched?	**Databases** • Cochrane Central Register of Controlled Trials (CENTRALpart of *The Cochrane Library*. www.thecochranelibrary.com • MEDLINE • Embase (if available) • Topic specific databases	See: The **LMIC Databases** document (might also be relevant for none LMIC reviews)
		Grey literature • OpenGrey http://www.opengrey.eu/ • Grey Literature Report (New York Academy of Medicine)	

		http://www.nyam.org/library/online-resources/grey-literature-report/ • Relevant websites	
		Trials Registries/Ongoing trials • 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	
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 • Records retrieved • Date searched • All strategies, if possible as run with number of records retrieved	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

*Sampson M, McGowan J, Lefebvre C, Moher D, Grimshaw J. PRESS: Peer Review of Electronic Search Strategies. Ottawa: Agency for Drugs and Technologies in Health; 2008 http://www.cadth.ca/publication/781 (20.07.2013)

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