Penn Medicine
Center for Evidence-based Practice

CENTER for EVIDENCE-BASED PRACTICE

CEP Methods Appendix: Standard search filters
January 2021

CEP has several standard search filters for specific types of evidence that are frequently used in the preparation of CEP evidence reports. As with other CEP methods, they are pragmatic tools designed to apply standardized and good quality methods to rapid reviews. Their use is not obligatory, and analysts may elect to use filters developed by other agencies (please see below for a selection of those sources). Search syntax is provided in the forms that CEP uses for routine searching: Ovid MEDLINE, Embase native syntax, and EBSCO CINAHL. Filters should not be used with the Cochrane Central Register, since that database already selects for controlled clinical trials.

Guidelines

MEDLINE	(guideline* or guidance).mp. or exp Guideline/ or exp Practice Guideline/
Embase	('practice guideline'/de OR guideline:ti,ab OR guidance:ti,ab)
CINAHL	(MH "Practice Guidelines") or guideline* or guidance

Systematic reviews

MEDLINE	limit [search line] to (meta analysis or systematic reviews)
Embase	[search line] AND ([systematic review]/lim OR [meta analysis]/lim)
CINAHL	[search line] AND Limiters - Publication Type: Meta Analysis, Meta Synthesis, Systematic Review

Clinical trials (Cochrane sensitive filter)

MEDLINE	1 randomized controlled trial.pt. 2 controlled clinical trial.pt. 3 randomized.ab. 4 placebo.ab. 5 drug therapy.fs. 6 randomly.ab. 7 trial.ab. 8 groups.ab. 9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 10 exp animals/ not humans.sh. 11 9 not 10
Embase	1 'randomized controlled trial'/de 2 'controlled clinical study'/de 3 #1 or #2 4 random*:ti,ab 5 'randomization'/de 6 'intermethod comparison'/de 7 placebo:ti,ab 8 (compare:ti OR compared:ti OR comparison:ti)

	9 ((evaluated:ab OR evaluate:ab OR evaluating:ab OR assessed:ab OR assess:ab) AND (compare:ab OR compared:ab OR comparing:ab OR comparison:ab)) 10 (open NEXT/1 label):ti,ab 11 ((double OR single OR doubly OR singly) NEXT/1 (blind OR blinded OR blindly)):ti,ab 12 'double blind procedure'/de 13 (parallel NEXT/1 group*):ti,ab 14 (crossover:ti,ab OR 'cross over':ti,ab) 15 ((assign* OR match OR matched OR allocation) NEAR/5 (alternate OR group OR groups OR intervention OR interventions OR patient OR patients OR subject OR subjects OR participant OR participants)):ti,ab 16 (assigned:ti,ab OR allocated:ti,ab) 17 (controlled NEAR/7 (study OR design OR trial)):ti,ab 18 (volunteer:ti,ab OR volunteers:ti,ab) 19 'human experiment'/de 20 Trial:ti 21 #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 22 #21 not #3 23 (((random* NEXT/1 sampl* NEAR/7 ('cross section*' OR questionnaire* OR survey OR surveys OR database or databases)):ti,ab) NOT ('comparative study'/de OR 'controlled study'/de OR 'randomised controlled':ti,ab OR 'randomized controlled':ti,ab OR 'randomly assigned':ti,ab)) 24 ('cross-sectional study'/de NOT ('randomized controlled trial'/de OR 'controlled clinical study'/de OR 'controlled study'/de OR 'randomised controlled':ti,ab OR 'randomized controlled':ti,ab OR 'control group':ti,ab OR 'control groups':ti,ab)) 25 ('case control*':ti,ab AND random*:ti,ab NOT ('randomised controlled':ti,ab OR 'randomized controlled':ti,ab)) 26 ('systematic review':ti NOT (trial:ti OR study:ti)) 27 (nonrandom*:ti,ab NOT random*:ti,ab) 28 'random field*':ti,ab 29 ('random cluster' NEAR/3 sampl*):ti,ab 30 (review:ab AND review:it NOT trial:ti) 31 ('we searched':ab AND (review:ti OR review:it)) 32 'update review':ab 33 (databases NEAR/4 searched):ab 34 ((rat:ti OR rats:ti OR mouse:ti OR mice:ti OR swine:ti OR porcine:ti OR murine:ti OR sheep:ti OR lambs:ti OR pigs:ti OR piglets:ti OR rabbit:ti OR rabbits:ti OR cat:ti OR cats:ti OR dog:ti OR dogs:ti OR cattle:ti OR bovine:ti OR monkey:ti OR monkeys:ti OR trout:ti OR marmoset*:ti) AND 'animal experiment'/de) 35 ('animal experiment'/de NOT ('human experiment'/de OR 'human'/de)) 36 #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 37 #22 not #36
CINAHL	S1 MH randomized controlled trials S2 MH double-blind studies S3 MH single-blind studies S4 MH random assignment S5 MH pretest-posttest design S6 MH cluster sample

	S7 TI (randomised OR randomized) S8 AB (random*) S9 TI (trial) S10 MH (sample size) AND AB (assigned OR allocated OR control) S11 MH (placebos) S12 PT (randomized controlled trial) S13 AB (control W5 group) S14 MH (crossover design) OR MH (comparative studies) S15 AB (cluster W3 RCT) S16 MH animals+ S17 MH (animal studies) S18 TI (animal model*) S19 S16 OR S17 OR S18 S20 MH (human) S21 S19 NOT S20 S22 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 S23 S22 NOT S21

Clinical pathways and algorithms

MEDLINE	1. ((clinical or critical or care) adj2 path*).mp. 2. (care adj2 (map* or plan*)).mp. 3. exp patient care planning/ 4. algorithm*.mp. or exp Algorithms/ 5. 1 or 2 or 3 or 4
Embase	'clinical protocol'/exp OR 'clinical pathway'/exp OR ((clinic* OR care* OR nurs*) NEAR/3 (pathway* OR algorithm* OR protocol*))
CINAHL	1. (MH "Critical Path") or (MH "Algorithms") or (MH "Decision Trees") or (MH "Protocols+") 2. (care or clinic* or decision* or nursing*) n2 (protocol* or path* or algorithm* or map*) 3. S1 or S2

Clinical decision support

MEDLINE	1. exp Medical Records Systems, Computerized/ 2. exp decision support systems, clinical/ 3. exp health information systems/ 4. ((electron* or computer*) adj3 (record* or informat* or chart*)).mp. 5. (((clinic* or comput* or electron* or automat*) adj3 decision*) and (decision* adj3 support*)).mp. 6. ((order* adj2 (set* or panel*w)) and ((electron* or computer* or autom*)adj2 order*)).mp. 7. (EMR or EHR or dashboard).mp. 8. (remind* or alert* or warn*) adj2 (electron* or autom* or comput*)).mp. 9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 *(broad filter)* 10. 2 or 5 11. 9 and decision.mp. 12. 10 or 11 *(narrow filter)*
Embase	[in development]
CINAHL	[in development]

Date and language restrictions

MEDLINE	`limit [search line] to (english language and yr="2014 -Current")`
Embase	`#[search line] AND [english]/lim AND [2014-2020]/py`
CINAHL	*Use limiters in Advanced Search window.*

Other publication type restrictions used in CEP searches

MEDLINE	`[search line] not case reports.pt.`
Embase	`#[search line] NOT ('conference abstract'/it OR 'conference paper'/it)` `#[search line] NOT 'case report'/de`
CINAHL	`S[search line] NOT PT (Anecdote OR Case Study)`

Other sources of search filters

CADTH (https://www.cadth.ca/resources/finding-evidence/strings-attached-cadths-database-search-filters)

"Strings Attached" is a collection of complex search filters developed by information specialists at the Canadian Agency for Drugs and Technologies in Health. While they are not described as optimized for sensitivity or specificity, the breadth of keywords and concepts included in each search indicates they will be relatively high in sensitivity. Filters include systematic review/meta-analysis/health technology assessment (all in one filter), randomized controlled trials, guidelines, economic evaluations and cost models, and health utilities/quality of life. Filters are provided in various combinations of Ovid MEDLINE, PubMed, and Ovid Embase syntax.

Cochrane (https://training.cochrane.org/handbook/version-6/chapter-4-tech-suppl)

The current Cochrane Handbook includes a technical supplement with specialized filters for identifying controlled trials in various key databases. A study comparing 36 different filters found that when searching MEDLINE, the 2008 Cochrane filters had the best combined sensitivity and specificity (1). These filters have been adopted as CEP's standard filter for controlled trials.

HIRU Hedges Project (https://hiru.mcmaster.ca/hiru/HIRU_Hedges_home.aspx)

Hedges is a collection of filters that were developed for the National Library of Medicine; they are built in to the Ovid MEDLINE search interface as "Clinical Queries." Hedges is notable for the validation studies that have been done on their filters and for the availability of sensitive, specific, and optimized versions for each filter category. Categories include reviews, therapy, diagnosis, prognosis, causation, economics, clinical prediction guides, qualitative, and costs. Filters are available for MEDLINE (both Ovid and PubMed syntax), Embase (Ovid syntax), and PsychINFO (Ovid syntax).

HTAi SuRe Info (http://vortal.htai.org/)

"SUmmarized REsearch in Information Retrieval for HTA" is a collection of resources for systematic reviews and health technology assessment reports. It is maintained by the Information Retrieval special interest group of Health Technology Assessment International and was developed as part of the EUnetHTA Core Model for health technology assessment.

SuRe Info does not include actual search filters. Instead it includes links to various external sources of filters, including CADTH, BMJ Clinical Evidence, and InterTASC (the NICE information specialists' working group). SuRe Info also includes tutorial essays on search strategy development, the effects of limiting searches by date and/or language of publication, and other aspects of information retrieval.

InterTASC (https://sites.google.com/a/york.ac.uk/issg-search-filters-resource/home)

The InterTASC Information Specialists' Sub-Group Search Filter Resource is maintained by staff of the National Institute for Health and Care Excellence (NICE) and other HTA and guideline developers in the United Kingdom. They have a systematic process for searching for and identifying newly-published filters, and maintain the most complete inventory of filters, categorized by the type of literature they are intended to identify. The InterTASC inventories are in bibliographic form and do not include the filters themselves: users must download the linked papers and websites to obtain the actual filters.

Besides the bibliographies of search filters, InterTASC includes bibliographies on topics like critical appraisal of search filters, methods papers, and links to search strategy blogs and discussion lists.

SIGN (https://www.sign.ac.uk/search-filters.html)

The Scottish Intercollegiate Guidelines Network uses filters developed in-house and filters adapted from other sources such as CADTH. They describe their filters as less sensitive than some others, but they may be more pragmatic. Filters for systematic reviews, RCTs, observational studies, diagnostic studies, and other types of literature are provided. Filters are provided for MEDLINE, Embase, and sometimes CINAHL; Ovid syntax is used.

References

1. Glanville J, Kotas E, Featherstone R, Dooley G. Which are the most sensitive search filters to identify randomized controlled trials in MEDLINE? J Med Libr Assoc. 2020 Oct 1;108(4): 556-563. doi: 10.5195/jmla.2020.912.