# Methods questions - information retrieval

Sept 2017 - IN PROGRESS/DRAFT

## Introduction

Discussions within the Exec have raised a number of areas in information retrieval methods where we feel there are gaps either in the methods or in the guidance, or both.

Work on information retrieval methods takes place across multiple methods groups.

This document details our attempt to list the main information retrieval methods-related questions. For each, we have summarised the issue/s and provided details of ongoing work that we are aware of. We have also mapped relevant guidance from Eunetha 2015 (<http://www.eunethta.eu/eunethta-guidelines>) and AHRQ 2014 (<https://effectivehealthcare.ahrq.gov/topics/cer-methods-guide/overview/>) .

We haven’t searched comprehensively for research, so there may well be relevant published and ongoing work not yet listed here.

## Topic 1: Conducting updates & ongoing surveillance to identify emerging studies

**Summary of issue/question:**

We are moving towards a “living” approach to systematic review production. Expectations are that evidence will be continually identified and integrated into reviews and guidelines.

How do we best approach evidence retrieval in a “living” paradigm?

What are the most efficient ways to identify emerging evidence?

How do we move towards a mode of continual surveillance for particular topic, while still maintaining traditional SR searches and update searches?

What impact does conducting multiple search updates have on the findings of a review?

What impact does a change in the search specialist have?

How should errors in previous iterations of the search strategies be handled?

What is the best way of managing citations & de-duplication of search results from multiple search updates?

Living systematic reviews interest Group on Mendeley: <https://www.mendeley.com/community/living-systematic-reviews-interest-group/documents/>

**Existing/ongoing/planned IS research and guidance:**

(1) Rice M, Ali M, Fitzpatrick-Lewis D, Kenny M, Raina P, Sherifali D. Updating Systematic Reviews with Simplified Search Strategies. J Clin Epidemiol Epub 2017 Jun 15.

(2) Shekelle PG, Shetty K, Newberry S, Maglione M, Motala A. Machine Learning Versus Standard Techniques for Updating Searches for Systematic Reviews: A Diagnostic Accuracy Study. Ann Intern Med. 2017 Jun 13.

(3) Bae JM, Kim EH. Citation Discovery Tools for Conducting Adaptive Meta-analyses to Update Systematic Reviews. J Prev Med Public Health 2016 Mar;49(2):129-133.

(4) Using Forward Snowballing to update Systematic Reviews in Software Engineering. ESEM '16: Proceedings of the 10th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement; 2016 Sep 8-9; New York, NY: ACM; 2016.

(5) Garner P, Hopewell S, Chandler J, MacLehose H, Schünemann HJ, Akl EA, Beyene J, Chang S, Churchill R, Dearness K, Guyatt G, Lefebvre C, Liles B, Marshall R, Martínez García L, Mavergames C, Nasser M, Qaseem A, Sampson M, Soares-Weiser K, Takwoingi Y, Thabane L, Trivella M, Tugwell P, Welsh E, Wilson EC, Schünemann HJ; Panel for updating guidance for systematic reviews (PUGs). When and how to update systematic reviews: consensus and checklist. BMJ. 2016 Jul 20;354:i3507.

(6) Sampson M, de Bruijn B, Urquhart C, Shojania K. Complementary approaches to searching MEDLINE may be sufficient for updating systematic reviews. J Clin Epidemiol Epub 2016 Mar 11.

(7) Eunethta. (2015). “Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”

**- Chapter 2.3.10. “Updating searches”:** *Auto alerts and other surveillance search techniques can help identify new relevant articles immediately after publication. However, they usually cannot replace a search update but may provide early signals for the necessity of such a search. (p. 22) And more on updating on the same page.*

**- Chapter 2.4.9. “Updating searches”:** *A short paragraph on updating searches from trials registers (p. 26) and: “If ongoing studies were identified in the initial search, their status should be checked at the time of the search update.”*

(8) Martínez García L, Sanabria A, Araya I, Lawson J, Solà I, Vernooij R, et al. Efficiency of pragmatic search strategies to update clinical guidelines recommendations. BMC Med Res Methodol 2015 Jul 31;15:57.

(9) Role of citation tracking in updating of systematic reviews. 2014 AMIA Summit on Clinical Research Informatics (CRI); 2014 Apr 7.

(10) Shekelle, P. G., et al. (2014). "Assessment of a method to detect signals for updating systematic reviews." Syst Rev 3: 13.

(11) Hemens BJ, Haynes RB. McMaster Premium LiteratUre Service (PLUS) performed well for identifying new studies for updated Cochrane reviews. J Clin Epidemiol 2012 Jan;65(1):62-72 e1.

(12) Wallace BC, Small K, Brodley CE, Lau J, Schmid CH, Bertram L, et al. Toward modernizing the systematic review pipeline in genetics: efficient updating via data mining. Genet Med 2012 Jul;14(7):663-669.

(13) Brasure M, Shamliyan T, Butler M, Kane RL. Finding Evidence on Ongoing Studies. 2010 December;AHRQ Publication No. 11-EHC018-EF:1-55.

(14) Sutton AJ, Donegan S, Takwoingi Y, Garner P, Gamble C, Donald A. An encouraging assessment of methods to inform priorities for updating systematic reviews. J Clin Epidemiol 2009 Mar;62(3):241-251.

(15) M. J. Sampson. Updating searches for systematic reviews. Aberystwyth, UK: Aberystwyth University, Department of Information Studies; 2009.

(16) Sampson M, Shojania KG, McGowan J, Daniel R, Rader T, Iansavichene AE, et al. Surveillance search techniques identified the need to update systematic reviews. J Clin Epidemiol 2008 Aug;61(8):755-762.

(17) Voisin CE, de la Varre C, Whitener L, Gartlehner G. Strategies in assessing the need for updating evidence-based guidelines for six clinical topics: an exploration of two search methodologies. Health Info Libr J 2008 Sep;25(3):198-207.

## Topic 2: Peer review of search strategies

**Summary of issue/question:**

Cochrane has recently carried out a consultation on it’s peer review policy, but we don’t have Cochrane guidance on conducting peer review of search strategies. We would like to find out: how widespread the practice of peer-reviewing search strategies is; what impact having a search strategy peer reviewed has on the resulting review; whether all all search strategies developed for systematic reviews should be peer-reviewed.

**Existing/ongoing/planned research and guidance:**

McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer

Review of Electronic Search Strategies: 2015 Guideline Statement. J Clin

Epidemiol. 2016 Jul;75:40-6. doi: 10.1016/j.jclinepi.2016.01.021. Epub 2016 Mar

19. PubMed PMID: 27005575.

Sampson M, McGowan J, Cogo E, Grimshaw J, Moher D, Lefebvre C. An

evidence-based practice guideline for the peer review of electronic search

strategies. J Clin Epidemiol. 2009 Sep;62(9):944-52. doi:

10.1016/j.jclinepi.2008.10.012. Epub 2009 Feb 20. Review. PubMed PMID: 19230612.

Sampson M, McGowan J. Errors in search strategies were identified by type and

frequency. J Clin Epidemiol. 2006 Oct;59(10):1057-63. Epub 2006 Jun 23. PubMed

PMID: 16980145.

Yoshii A, Plaut DA, McGraw KA, Anderson MJ, Wellik KE. Analysis of the

reporting of search strategies in Cochrane systematic reviews. J Med Libr Assoc.

2009 Jan;97(1):21-9. doi: 10.3163/1536-5050.97.1.004. PubMed PMID: 19158999;

PubMed Central PMCID: PMC2605027.

Relevo R, Paynter R. Peer Review of Search Strategies [Internet]. Rockville

(MD): Agency for Healthcare Research and Quality (US); 2012 Jun. Available from

<http://www.ncbi.nlm.nih.gov/books/NBK98353/>

PubMed PMID: 22787681.

Craven, J; Levay, P. Recording Database Searches for Systematic Reviews - What is the Value of Adding a Narrative to Peer-Review Checklists? A Case Study of NICE Interventional Procedures Guidance. Evidence Based Library and Information Practice, [S.l.], v. 6, n. 4, p. 72-87, dec. 2011. ISSN 1715-720X. Available at: <https://journals.library.ualberta.ca/eblip/index.php/EBLIP/article/view/11594>

SUREInfo - Peer reviewing search strategies

<http://vortal.htai.org/?q=node/918>

## Topic 3: Searching for Non-RCT’s

**Summary of issue/question:**

As Cochrane continues to diversify in terms of the types of evidence it synthesises, it will be become increasingly important that information specialists are equipped with the skills and knowledge needed to find the evidence needed.

**Existing/ongoing/planned research and guidance:**

Ongoing [IQWiG project GA16-01](https://www.iqwig.de/en/projects-results/projects/institute-management/ga16-01-identification-and-assessment-of-study-filters-for-the-search-for-non-randomized-studies.7308.html#overview) (testing available search filters for NRS)

1) Poster at GES 2017 2) German Working Paper due in 4th quarter 2017 3) English publication 2018?

Protocol (Cochrane Methodology Review Group): [MR000041: Marcano Belisario JS et al.: Search strategies to identify observational studies in MEDLINE and EMBASE](http://onlinelibrary.wiley.com/doi/10.1002/14651858.MR000041/full), 2013

AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Review, January 2014:

- Chapter 5: “Strategies for finding observational studies” (p. 101, two paragraphs)

### Topic 4: Prognostic studies

**Summary of issue/question:**

As Cochrane continues to diversify in terms of the types of evidence it synthesises, it will be become increasingly important that information specialists are equipped with the skills and knowledge needed to find the evidence needed. Prognostic studies will present many similar challenges to the identification of DTA studies. However, with prognostic studies it still remains unclear which sources are best searched for such studies.

What are key/critical bibliographic sources that need to be searched for prognostic studies?

Which search filter, if any, should be used to identify prognostic studies from bibliographic databases?

**Existing/ongoing/planned research and guidance:**

Corp N, Jordan JL, Hayden JA, Irvin E, Parker R, Smith A, van der Windt DA.
Protocol: a systematic review of studies developing and/or evaluating search
strategies to identify prognosis studies. Syst Rev. 2017 Apr 20;6(1):88. PMID: [28427475](https://www.ncbi.nlm.nih.gov/pubmed/28427475)

[Utilisation of search filters in systematic reviews of **prognosis** questions.](https://www.ncbi.nlm.nih.gov/pubmed/23176027)

**Chatterley T**, Dennett L. Health Info Libr J. 2012 Dec;29(4):309-22. doi: 10.1111/hir.12004.

<http://effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?productid=1682&pageaction=displayproduct>

### Topic 5: Use of methodological filters for diagnostic test accuracy studies

**Summary of issue/question:**

As Cochrane continues to diversify in terms of the types of evidence it synthesises, it will be become increasingly important that information specialists are equipped with the skills and knowledge needed to find the evidence needed. In the last few years a number of filters have been developed and tested. The current recommendation is that use of a methodological filter is not recommended. However questions remain about whether or not a filter might be acceptable in certain circumstances (for example, applied to updates of DTA reviews where the literature might prove to be reported and indexed better).

**Existing/ongoing/planned research and guidance:**

Handbook: http://methods.cochrane.org/sdt/handbook-dta-reviews

SUREInfo page: *Diagnostic accuracy* <http://vortal.htai.org/?q=node/339>

* Sources to search
* Designing search strategies

<http://effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?productid=1682&pageaction=displayproduct>

### Topic 6: Qualitative studies

**Summary of issue/question:**

As Cochrane continues to diversify in terms of the types of evidence it synthesises, it will be become increasingly important that information specialists are equipped with the skills and knowledge needed to find the evidence needed, including qualitative evidence. What methods and sources should we be using to identify qualitative evidence?

**Existing/ongoing/planned research:**

Supplemental Handbook Guidance:

Booth A. Chapter 3: Searching for Studies. In: Noyes J, Booth A, Hannes K, Harden A, Harris J, Lewin S, Lockwood C (editors), Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions. Version 1 (updated August 2011). Cochrane Collaboration Qualitative Methods Group, 2011. Available from: <http://methods.cochrane.org/qi/supplemental-handbook-guidance>

## Topic 7: Search methods for regulatory data sources/clinical trial registries

**Summary of issue/question:**

Ongoing Methods Innovation Fund project: Interim guidance on the inclusion of clinical study reports and other regulatory documents in Cochrane Reviews. <http://methods.cochrane.org/methods-innovation-fund-2>

**Existing/ongoing/planned research and guidance:**

Eunethta: Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”-Guideline, 2015:

- Chapter 2.5.1. “Unpublished company documents” (clinical study reports)

- Chapter 2.5.2. “Regulatory documents”

AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Review, 2014:

- Chapter 5: “Regulatory data” (p. 98): two paragraphs

- Chapter 5: “Scientific information packets” (p. 99)

- Chapter 6: “Regulatory documents” and “Empirical findings on the value of searching for regulatory documents” (p. 131-134)

##

## Topic 8: What databases to search

**Summary of question:**

Cochrane Information Specialists search a variable number of sources in their efforts to identify randomised trials for reviews. Searching many of these sources is a time intensive activity, often with little or no unique trials being identified.

What are the minimum/essential databases to search for systematic reviews of RCTs and which databases can we safely decide not to search?

What influence, if any, does the topic have?

**Existing/ongoing/planned research and guidance:**

Ross-White A, Godfrey C. Is there an optimum number needed to retrieve to
justify inclusion of a database in a systematic review search? Health Info Libr J. 2017 Jun 27. doi: 10.1111/hir.12185. [Epub ahead of print] PubMed [28656714](https://www.ncbi.nlm.nih.gov/pubmed/28656714)

Aagaard, T., et al. (2016). "Optimizing literature search in systematic reviews - are MEDLINE, EMBASE and CENTRAL enough for identifying effect studies within the area of musculoskeletal disorders?" BMC Med Res Methodol 16: 11.

Halladay, C. W., et al. (2015). "Using data sources beyond PubMed has a modest impact on the results of systematic reviews of therapeutic interventions." J Clin Epidemiol 68(9): 1076-1084.

Hartling, L., et al. (2016). "The contribution of databases to the results of systematic reviews: a cross-sectional study." BMC Med Res Methodol 16(1): 127.

Upcoming poster at GES 2017: “Selective searching for high quality health-related evidence syntheses – more bias or time gained?”

Eunethta: Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”-Guideline, 2015:

Chapter 2.3.4. “Choosing information sources”

Some information, but “However, insufficient empirical evidence is available so far on how many and which databases should be regularly searched.” and “However, the additional impact of searching in regional databases has been insufficiently investigated…” (p.18)

Chapter 2.4.3. “Choosing information sources”

Information on searching trials registers (p. 24). Echoes MECIR: ICTRP + CT.gov to be used.

AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Review, 2014:

- Chapter 5: “Specialized database searching” (p. 102)

Topic 9: What other techniques should be used to locate studies

**Summary of question:**

In addition to database searches to retrieve evidence we are advised to use supplementary techniques such as reference checking, forwards and backwards citation checking (‘snowballing’ or ‘pearl growing’),‘similar articles’ features and other systematic reviews as a source of studies. What are the most efficient and valuable techniques we should be using to supplement database searches? What impact do these techniques have on the review?

**Existing/ongoing/planned research:**

SUREInfo page: *Value of using different search approaches* <http://vortal.htai.org/?q=node/993>

* Related citations
* Reference checking (backward citation) and citation tracking (forward citation)
* Full text search
* Automated retrieval methods
* Hand searching

Eunethta: Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”-Guideline, 2015:

- Chapter 1.1.6. “Surveillance search techniques” (snowballing, pearl growing, similar articles-function on p. 10) → these are definitions, rather than use cases

- Chapter 1.1.10 “Auto alert” (short paragraph) → definition, not use case

- Chapter 2.5.3. “Queries to authors” (they state this as a task for review authors)

- Chapter 2.5.5. “Reference lists of publications” (“as adjunct to other search methods”, p. 29)

AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Review, 2014:

- Chapter 5: “Using Key Articles” (p. 102-3)

- Chapter 5: “Corresponding with researchers” (p. 104)

Cochrane Handbook (2018 version) to include chapter on “alert services”

HLWIKI International - Medical Librarians Wiki:

<http://hlwiki.slais.ubc.ca/index.php/Snowballing> - includes a reference list

**Selected papers:**

Levay P, Ainsworth N, Kettle R, Morgan A. Identifying evidence for public

health guidance: a comparison of citation searching with Web of Science and

Google Scholar. Res Synth Methods. 2016 Mar;7(1):34-45. doi: 10.1002/jrsm.1158.

Epub 2015 Jul 3. PubMed PMID: 26147600.

Hinde S, Spackman E. Bidirectional citation searching to completion: an

exploration of literature searching methods. Pharmacoeconomics. 2015

Jan;33(1):5-11. doi: 10.1007/s40273-014-0205-3. PubMed PMID: 25145803.

Wright K, Golder S, Rodriguez-Lopez R. Citation searching: a systematic review

case study of multiple risk behaviour interventions. BMC Med Res Methodol. 2014

Jun 3;14:73. doi: 10.1186/1471-2288-14-73. PubMed PMID: 24893958; PubMed Central

PMCID: PMC4048585.

Papaioannou D, Sutton A, Carroll C, Booth A, Wong R. Literature searching for

social science systematic reviews: consideration of a range of search techniques.

Health Info Libr J. 2010 Jun;27(2):114-22. doi: 10.1111/j.1471-1842.2009.00863.x.

PubMed PMID: 20565552.

Topic 10: What tools or techniques can be used to improve the identification of studies

**Summary of question:**

A number of new techniques are emerging that offer potential to help identify relevant studies.

How can text mining support study identification?

What tools and guidance are available?

How can machine learning support study identification?

**Existing/ongoing/planned research:**

→ See “objective approach (text mining of relevant articles extracted from SRs)”:

Hausner E, Guddat C, Hermanns T, Lampert U, Waffenschmidt S. [Prospective comparison of search strategies for systematic reviews: an objective approach yielded higher sensitivity than a conceptual one.](https://www.ncbi.nlm.nih.gov/pubmed/27256930) J Clin Epidemiol. 2016 Sep;77:118-124.

Topic 11: How to deal with conference abstracts?

**Summary of issue/question:**

Conference abstracts can be prove a rich source of trial information - often about ongoing or unpublished trials.

How best to identify conference material?

Is not searching for conference material contributing to publication bias within a review?

**Existing/ongoing/planned research:**

Eunethta: Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”-Guideline, 2015:

- Chapter 2.5.4. Conference abstracts

“... For these reasons, it is not recommended to routinely search for abstracts and reviewers should always try to obtain the full report or further study details, before considering whether to include the results in the review” but “However, especially if systematic literature searches for published studies yield no or very few citations, searching conference abstracts and proceedings may be considered to identify additional studies.” (p. 29) and more...

AHRQ Methods Guide for Effectiveness and Comparative Effectiveness Review, 2014:

- Chapter 5: “Abstracts and conference proceedings” (p. 98 two sentences, recommend searching)

- Chapter 6: “Conference abstracts and proceedings” (p. 135-6 provides empirical findings on the value of searching these sources)

Topic 12: How to deal with grey literature?

**Summary of issue/question:**

What is the yield of unique trials identified from grey literature?

**Existing/ongoing/planned research:**

Eunethta: Process of information retrieval for systematic reviews and health technology assessments on clinical effectiveness”-Guideline, 2015:

- Chapter 2.5.6. “Dissertations and reports” (p.30, “not recommended to search routinely”)

## Topic 13: Reports of trials published in ‘predatory journals’

**Summary of question:**

So-called ‘predatory publishing’ raises some important questions that information specialists should be aware of. How can we recognise when a journal is ‘predatory’? What are the implications if a relevant study is published in a suspected predatory journal?

**Existing/ongoing/planned research:**

Shamseer L, Moher D, Maduekwe O, Turner L, Barbour V, Burch R, Clark J, Galipeau J, Roberts J, Shea BJ. Potential predatory and legitimate biomedical journals: can you tell the difference? A cross-sectional comparison. BMC Med. 2017 Mar 16;15(1):28. doi: 10.1186/s12916-017-0785-9 Available from:<https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-017-0785-9>

Gonzalez J, Bridgeman MB, Hermes-DeSantis ER. Differentiating predatory
scholarship: best practices in scholarly publication. Int J Pharm Pract. 2017 Jun
30. doi: 10.1111/ijpp.12380. [Epub ahead of print] PubMed PMID: 28664997.