



Is it possible to focus EMTREE without loss of sensitivity when searching Embase for systematic reviews?

Steven Duffy, Janine Ross, Kate Misso, Caro Noake & Lisa Stirk
Kleijnen Systematic Reviews Ltd, York

Contact author: steven@systematic-reviews.com

BACKGROUND

Systematic reviews require a comprehensive search of multiple databases in order to minimise bias.¹ MEDLINE and Embase are the most commonly searched bibliographic databases when undertaking reviews of health care interventions. As the overall search results for systematic reviews appear to be getting increasingly larger, it would help reduce workload if search results could be made smaller to reduce screening burden and costs. Indexing terms from the EMTREE thesaurus can be restricted to retrieve results where the subject heading term is the main focus of the article (Restrict to Focus (RTF)). Focusing EMTREE subject heading terms in Embase could significantly reduce the number of records retrieved by limiting retrieval to the most relevant records.² Previous investigations undertaken by IQWiG Information Specialists indicated that focusing EMTREE in searches specifically for reviews of drug interventions retained sensitivity while dramatically reducing the number of records retrieved.³

OBJECTIVE

To investigate whether restricting EMTREE indexing terms to focus when searching Embase reduces the number of records retrieved without losing relevant studies.

METHODS

Embase searches conducted in recent systematic reviews undertaken by Kleijnen Systematic Reviews Ltd were retrospectively compared with search strategies in which the EMTREE terms were RTF. The records retrieved by the RTF EMTREE searches were investigated to see if included studies identified by the original unfocused (UF) Embase searches were still identified. The review searches under investigation covered various subjects: anaphylaxis,⁴ bile acid malabsorption (SeHCA),⁵ KRAS testing for colorectal cancer,⁶ and alcohol misuse in female offenders.⁷ A prospective investigation is currently underway using an ongoing review about medicinal cannabis.⁸

RESULTS

In all cases the number of records retrieved with focused EMTREE searches was reduced, but in only two cases without the loss of any included studies.

Table 1. Number of records retrieved

Review	Original UF search yield	RTF EMTREE search yield	Difference in search yield	Total included studies (in Embase)	Included studies retrieved with RTF EMTREE
SeHCA	2450	1330	1120 (46%)	24 (20)	20
Anaphylaxis	2304	731	1573 (68%)	5(4)*	2
KRAS	4516	3291	1225 (27%)	7(6)	6
Female offenders	1395	1109	286 (20%)	27(25)†	15

*3 of the 4 studies indexed in Embase were retrieved by the original UF search

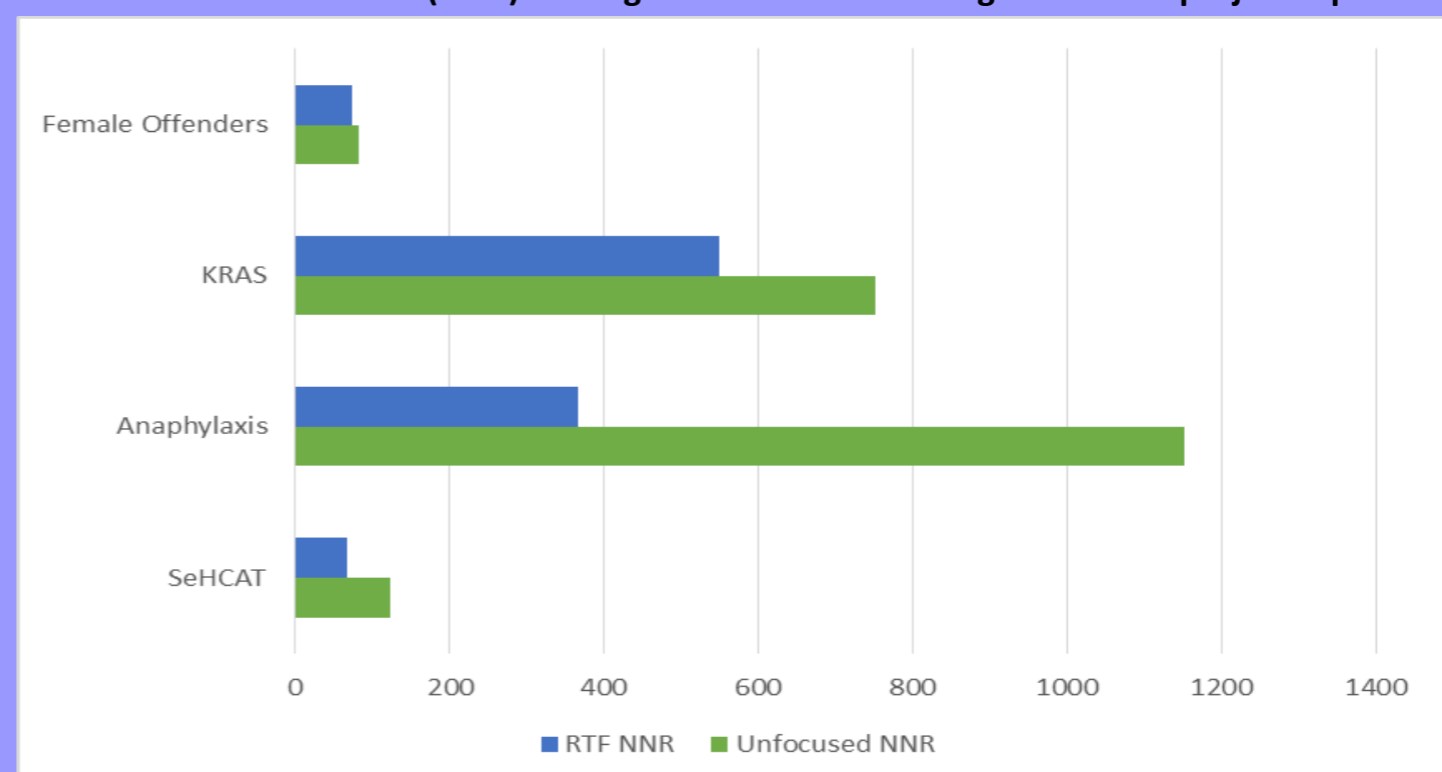
†17 of the 25 studies indexed in Embase were retrieved by the original UF search

Table 2. Search sensitivity

	SeHCA	Anaphylaxis	KRAS	Female offenders
Sensitivity original search	20/20 = 100%	3/4 = 75%	6/6 = 100%	17/25 = 68%
Sensitivity RTF search	20/20 = 100%	2/4 = 50%	6/6 = 100%	15/25 = 60%

Figure 1.

Numbers needed to read (NNR) for original UF and RTF strategies for each project topic



CONCLUSION

Reducing the number of records retrieved from systematic review searches of Embase without a loss of sensitivity could improve efficiency, save time and minimise costs. However, the results of this investigation are inconclusive. The topics covered were diverse with little similarity in search terms, and so the results are not generalisable to all systematic literature searches. Other limitations were observed. Firstly, field tags used in free text search lines affecting the EMTREE search line results were removed when testing strategies (e.g., mp, af, hw, rn). Secondly, reviews with less well defined terminology were more difficult to focus as EMTREE terms either did not exist or were more ambiguous e.g., 'risk' in the anaphylaxis review and 'alcohol' and 'offenders' in the female offenders review. Finally, Embase results were investigated in isolation, whereas in reality other databases were also searched, inevitably having an impact on the overall retrieval of records and whether included studies unidentified in Embase were retrieved elsewhere.

FURTHER INVESTIGATION

To investigate whether focusing EMTREE across a set of comparable reviews produces more conclusive results, so that Information Specialists can confidently use focused EMTREE in their search strategies. Reviews will be compiled into groups with similar themes: drug interventions; specific diseases; non-health related reviews (where searches are more reliant on free text rather than EMTREE). Reviews will be identified by searching for new reviews produced by selected Cochrane Review Groups, and will only be included if they meet specified inclusion criteria.

REFERENCES

- Centre for Reviews and Dissemination. Systematic Reviews: CRD's guidance for undertaking reviews in health care [Internet]. York: University of York, 2009 [accessed 23.3.11] Available from: <http://bit.ly/T54uFS>
- Embase indexing guide 2012: a comprehensive guide to Embase indexing policy: Elsevier, 2012 Available from: <http://bit.ly/1qGG830>
- Hausner E, Simon M, Kaiser T. Focused EMTREE terms vs. non-focused EMTREE terms to search for clinical drug trials in Embase. 16th Cochrane Colloquium: evidence in the era of globalisation. Freiburg, Germany, 2008: 87.
- Armstrong N, Wolff R, van Mastrigt G, Martinez N, Hernandez A, Misso K, et al. A systematic review and cost-effectiveness analysis of specialist services and adrenaline auto-injectors in anaphylaxis. Health Technol Assess 2013;17(17):1-117.
- Riemsma R, Al M, Corro Ramos I, Deshpande S, Armstrong N, Lee Y-C, et al. SeHCA [tauroselcholic (selenium-75) acid] for the investigation of bile acid malabsorption and measurement of bile acid pool loss: a systematic review and cost-effectiveness analysis. Health Technol Assess 2013;17(61):1-236.
- Westwood M, van Asselt T, Ramaekers B, Whiting P, Joore M, Armstrong N, et al. KRAS mutation testing of tumours in adults with metastatic colorectal cancer: a systematic review and cost-effectiveness analysis. A Diagnostic Assessment Report commissioned by the NIHR HTA Programme on behalf of the National Institute for Health and Clinical Excellence. York: Kleijnen Systematic Reviews Ltd, 2013
- McMurrin M, Riemsma R, Manning N, Misso K, Kleijnen J. Interventions for alcohol-related offending by women: a systematic review. Clin Psychol Rev 2011;31(6):909-22.
- KSR Ltd. Systematic review of cannabis for medical use [ongoing review].