Author's response to reviews

Title: Optimal search strategies for detecting cost and economic studies in EMBASE.

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Author's response to reviews: see over
Reviewer's report

Title: Optimal search strategies for detecting cost and economic studies in EMBASE.
Version: 1 Date: 14 April 2006
Reviewer: Julie Glanville

Reviewer's report:

General
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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. The authors have analysed records for one year (2000) - the Discussion should really explore the implications of this for searching earlier years in EMBASE and later years. This is particularly important for years after 2000 as the number of indexing terms EMBASE now seems to assign to records have vastly increased, with a potential to impact on the performance of these strategies.

As the reviewer points out our search strategies were developed using data from one publishing year, the year 2000. Changes to indexing, such as new terms added to Emtree or changes in the way articles are indexed (e.g., more index terms applied to each citation), may impact the operating characteristics of the reported search strategies. When conducting our research on MEDLINE retrieval, however, we found that search strategies developed in 1991 were robust when searching in our 2000 database. It appears that unless there are major changes to indexing, the search strategies will perform very similarly. Additionally, if changes within Emtree do occur post 2000 and the terms are of a methodologic nature relating to cost and/or economic studies it is likely that our search strategies will perform similarly particularly in strategies where exploded index terms are included and where text words make up the search strategy.

The following has been added to the Discussion section of the manuscript: “It is important to note that several top performing terms are exploded index terms and many are text words. In the event that new index terms relevant to cost and/or economic studies are added to Emtree, it is likely that our reported search strategies will perform similarly in terms of sensitivity and specificity. Text word searching involves only the title and abstract of the article so additions to Emtree will have no effect on the performance of these terms. Additionally, if new index terms are added and if they are closely related to the exploded index term included in the search strategy, the articles indexed with the new term will be retrieved.”

In the event the indexing habits change and more terms are added to an article, precision is likely to be impacted. The following has been added to the Discussion section of the manuscript: “In addition to precision being dependent on the concentration of target articles in the entire database, low precision returns could also point to a potential problem of over indexing, that is, index terms that appear to be
specific to good quality economic studies are not used solely for those types of articles resulting in the retrieval of many false positive articles (i.e., studies that are not evaluating the cost or economics of a health care situation).”

As well as the following addition to the Discussion section of the manuscript: “Precision is also dependent on the concentration of target articles (in this case, cost or economic studies) in the entire database. We tested our search strategies in a subset of EMBASE records. Therefore, the precision figures reported are included only as an illustration of search strategy performance. When searching in the entire EMBASE database, precision will be lower.”

2. The methods section of the abstract needs attention for a couple of sentences that don't make sense.

The abstract has been re-written to correct these errors and present a more thorough and comprehensive overview of the article.

3. p.9 Typo: 'Theoptimized'

The typo has been corrected and now reads: ‘The optimized’


A full stop at the end of the sentence in question has been added.

Discretionary Revisions (which the author can choose to ignore)

1. The authors' definitions of economic evaluations are fairly rigorous. Our experience working with health care decision makers in the UK is that although well conducted economic evaluations are ideal even poorer evaluations can prove useful (for a variety of reasons). The authors state that their economic records are a subset of their cost studies, so it would be helpful if the authors could offer some explicit guidance to searchers in the Discussion section whether they feel the search strategies for cost papers would be a useful 'second line' search to identify 'poorer' economic evaluations, if the economic studies searches had not yielded enough information. Can the two searches be offered as a stepped approach?

Good suggestion! If the search strategy used to get at economic studies was not yielding the desired results, a second approach of using the cost search strategies could be to used to provide a much broader scope for searching.

The following has been added to the Discussion section of the manuscript: “The methodologic criteria for economic studies are fairly rigorous as noted by the number of pass economic studies (n=31) in the database. Since pass and fail economic studies are a subset of cost studies, searchers could use the cost strategies if they fail to find relevant articles when searching using the economic strategies.”

2. It's not clear from the authors' definitions of an economic study whether evaluations using models based on hypothetical populations would be regarded as an economic study. If they were, then it would be helpful to bring this out in the text. If not, then the authors should ideally assess whether modelling
studies (which are increasing in number) are being missed by the strategies, and report in the Discussion.

Studies met our definition of a pass economic study only if they were based on real patients. Those that were based solely on models and not real patients might be missed when using our economic search strategies but by using the 2 step strategy outlined above, more would be captured.

The following has been added to the Discussion section of the manuscript: “This is also true for economic studies based on models. Our definition of a pass economic study required that the study be based on data from real patients. Therefore, those that were based on models would only be retrieved as “false positives” when using our economic search strategies but have high likelihood of being retrieved when using the cost strategies.”

3. In the second paragraph of the introduction the authors comment on the problems of accessing economic literature. While this may have been true in the past there are now a number of databases of economic evaluation studies available, designed to make this task easier (and providing added value in terms of categorisation and critical appraisal), including NHS EED, HEED, CODECS, EURONHEED and the Harvard Register. It is still important to be able to efficiently access economic studies in EMBASE, but it might be helpful to searchers reading this paper to remind them of other resources which might complement a focused search of EMBASE. Declaration of interest: I am the project manager for the NHS EED database.

We have slightly revised the Introduction in view of the reviewer’s comment. We included the following: “Several databases provide access to this literature; some are specialty databases such as the UK National Health Service Economic Evaluation Database (http://www.york.ac.uk/inst/crd/crddatabases.htm) while others are large general purpose biomedical databases. End-users frequently access the medical literature online via the huge biomedical databases such as MEDLINE and EMBASE.”

4. The authors developed their strategies using terms suggested by a range of individuals. Given that we only have the words that authors have given us in titles and abstracts, and any indexing applied by EMBASE, to search with, it would be interesting to see a discussion of why records were not analysed to assess the words they actually contain rather than words that individuals thought might be high yielding.

We thank the reviewer for mentioning this point as it is one we have also considered. We are currently collaborating with two research groups in the United States to develop and compare search strategies derived using machine learning methodologies. These future research plans have been added to the end of the manuscript.

5. In the introduction the authors assert that databases index inconsistently. Their results seem to show that for EMBASE there are some quite reliable indexing terms, with reference to sensitivity, which can be used in recommended strategies. It might be useful to consider what aspect of inconsistency a database such as EMBASE seems to suffer from in this context - from this example it might be that EMBASE's problem is in over indexing (poor precision) rather than under indexing (poor sensitivity)?

This point has been addressed above, under Minor Essential Revisions #1.
6. In the second paragraph of page 10, the authors note 'This is simply a reflection of the very low concentration of cost and economics in the huge EMBASE database'. I think some examples that bring out how low precision is caused by the fact that the search terms (e.g. costs) are actually used in many other contexts and so generate lots of false drops might help to illustrate the point. For example, many abstracts end with a concluding thought that 'the costs of introducing this technique need to be investigated' or include introductory statements such as 'the costs of smoking to society are ever present'. This type of general usage of search terms such as 'costs' means that finding economic evaluation studies and genuine cost studies can seem like finding a needle in a haystack.

This point has also been addressed above, under Minor Essential Revisions #1.

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research Interests

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I manage the NHS EED database (economic evaluations) produced by the Centre for Reviews and Dissemination, University of York, England, UK.