Author's response to reviews

Title: EMBASE search strategies for identifying methodologically sound diagnostic studies for use by clinicians and researchers

Authors:

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Version: 2 Date: 23 February 2005

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

Title: Optimal search strategies for identifying diagnostic studies in EMBASE

Version: 1 Date: 24 October 2004

Reviewer: Madhukar Pai

Reviewer’s report:

General
This is a useful contribution to the diagnostic literature. The following minor revisions might help improve the paper.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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. Title: Should it be “methodologically sound” diagnostic studies”?
   The title of the article has been changed as the reviewer indicates.

2. Abstract:
   a. Background: Last line, should it be “optimize the retrieval of "methodologically sound" diagnostic studies from EMBASE”?
      The last line of the background of the abstract has been changed as the reviewer indicates.
   b. Methods: Because not everybody might be familiar with this type of research, it might be useful to add a line (taken from the text on page 6): “The proposed search strategies were treated as “diagnostic tests” for sound studies and the manual review of the literature was treated as the “gold standard.” This line should precede the line “The sensitivity, specificity, precision, and accuracy of the search strategies were calculated.”
      We have now included this sentence in the methods section of the abstract as the reviewer indicates.
   c. Results: Last line, the number 98.2% - it is not clear as to what the number is (sensitivity, specificity, or something else?).
      We have clarified this in the results section of the abstract by adding (“specificity of” 98.8%).
   d. Conclusion: Last line should be “EMBASE”, not MEDLINE
      Change made as indicated by the reviewer.

3. Introduction:
   a. I think the introduction needs elaboration. Although the authors have published a lot in this area, the article should, ideally, stand on its own. Therefore, it will be
helpful to add something about what EMBASE is, how is it different from MEDLINE, and why EMBASE should be searched. EMBASE is not an easy database to access (its expensive and not available in many institutions). So, why would clinicians want to search EMBASE (when PubMed is freely available), and how useful will this work on search strategies be for searching EMBASE?

The following statements now appear in the second paragraph of the Background of the paper:

In addition to searching MEDLINE, clinicians may wish to search other electronic databases such as EMBASE to more comprehensively cover their topic of interest. EMBASE is complementary to MEDLINE in that EMBASE provides greater coverage of the European and non-English language publications and provides broader coverage in such areas as psychiatry and toxicology [3].

b. The authors need to be more explicit about the “objective” of the search strategy development process? Was the objective to develop a search strategy that will be most sensitive and specific in locating primary diagnostic studies? Or, was it to locate high quality primary diagnostic studies? Or, to develop a highly sensitive search strategy that will help in identifying studies for systematic reviews and meta-analyses?

The objective of the study (final sentence of the background section of the paper) has been changed to be more explicit and now appears as follows:

We now report the extension of this research for EMBASE, including the information retrieval properties of single terms and combinations of terms for maximizing the sensitivity and specificity of identifying methodologically sound primary (original) studies on the diagnosis of health disorders.

4. Methods:
a. The authors need to be consistent with use of terms: in some places they use “methodological criteria” and in others “scientific criteria.” Not sure if these terms are being used inter-changeably. Might be less confusing to use any one term consistently.

   All instances of “scientific criteria” have been changed to “methodologic criteria”.

5. Results:
a. In all 3 tables, it might be a good idea to add a footnote with definitions of sensitivity, specificity, precision and accuracy.

   The definition of these terms now appear as a footnote to each of the 3 tables.

6. Discussion:
a. The authors found that textwords outperformed most index terms for sensitivity and specificity. Can the authors speculate on why this might be? Does this finding have any implications/utility for EMBASE indexers?

   As shown in the tables we actually found that in most cases a combination of textwords and index terms produced the best performance. In Ovid, .mp. searching occurs in title, abstract, and subject headings. Thus, no change has been made to the manuscript.
b. The authors are aware that searching databases for locating evidence for clinical practice (need to be fairly specific) is different from searching databases for identifying studies for systematic reviews (need to be very sensitive). The fact that they designed the filters to identify “methodologically sound” studies makes it hard to use it for systematic reviews. There is a risk that relevant studies might be missed. If at all a decision is made to exclude low quality studies from a systematic review, it is often made at a later stage in the review process (e.g. after data extraction and quality assessment), not while searching databases. This issue should discussed in the manuscript.

The reviewer is correct and we have added this sentence to the Discussion:

If systematic reviewers wish to include diagnostic test articles that fail the methodologic criteria we set, they will still be well served by starting with this strategy: in addition to retrieving all sound studies, the suboptimal specificity of our most sensitive search strategy (70.4%) means the many lower quality diagnostic test studies will also be retrieved. Reviewers may then use additional means to ensure that all pertinent studies are retrieved.

Discretionary Revisions (which the author can choose to ignore)

Which journal?: Appropriate or potentially appropriate for BMC Medicine: an article of importance in its field

What next?: Accept for publication in BMC Medicine after minor essential revisions

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests: None
Reviewer’s report

Title: Optimal search strategies for identifying diagnostic studies in EMBASE

Version: 1 Date: 15 December 2004

Reviewer: Jochen R Moehr

Reviewer’s report:

General
This is a very clear, well written paper of interest to medical professionals who try to improve their skills at researching literature in databases in general and in EMBASE in particular.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
None

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
None

Discretionary Revisions (which the author can choose to ignore)
None

Review #2 has no suggested changes for the manuscript.

Which journal?: Appropriate or potentially appropriate for BMC Medicine: an article of importance in its field

What next?: Offer publication in BMC Medical Informatics and Decision Making without revision

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests: I know the authors and have collaborated with them in a Network of Centres of Excellence. I declare that I have no competing interests.
Reviewer’s report

Title: Optimal search strategies for identifying diagnostic studies in EMBASE

Version: 1 Date: 23 December 2004

Reviewer: Andrew Booth

Reviewer’s report:
General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

"Sensitivity for a given topic is defined as the proportion of high quality articles for that topic that are retrieved; specificity is the proportion of low quality articles not retrieved; precision is the proportion of retrieved articles that are of high quality; and accuracy is the proportion of all articles that are correctly classified." - provide a reference for this.

The sentence in manuscript now appears as:
Borrowing from the concepts of diagnostic test evaluation and library science, sensitivity for a given topic is defined as the proportion of high quality articles for that topic that are retrieved; specificity is the proportion of low quality articles not retrieved; precision is the proportion of retrieved articles that are of high quality; and accuracy is the proportion of all articles that are correctly classified [22].

Discretionary Revisions (which the author can choose to ignore)

"The current best evidence published in health care journals is usually first widely accessible through major biomedical databases such as MEDLINE and EMBASE."

Not literally - Tables of Contents services are the first wave. Bibliographic databases are subject to some delay - even though PubMed does In Progress entries these are not fully retrievable so it is only after they have full indexing and abstracts that the findings of this study apply.

We wouldn’t consider Tables of Contents being widely available to clinicians. Nevertheless, we’ve modified this somewhat. The sentence in the manuscript now appears as:
For most clinicians and researchers the current best evidence published in health care journals is usually first widely accessible through major biomedical databases such as MEDLINE and EMBASE.

"the increasing amount of innovation and new knowledge concerning diagnosis" Do you mean that this is proportionately higher to other types of knowledge (i.e. do you have evidence to substantiate that it is particularly an issue for diagnosis) or are you simply talking about the general phenomenon of the information explosion?
We are talking about the general phenomenon of the information explosion. Thus, no change to the manuscript.

"Overall research staff hand searched 170 journal titles which were chosen based on recommendations of clinicians and librarians, Science Citation Index Impact Factors provided by the Institute for Scientific Information, and ongoing assessment of their yield of studies and reviews of scientific merit and clinical relevance for the disciplines of internal medicine, general medical practice, mental health, and general nursing practice (list of journals provided by the authors upon request)".

Split into two sentences to make it clearer.

The sentence has been split into two sentences to clarify meaning.

Can research staff be "rigorously calibrated" - should this be their performance?

The sentence has been changed in the manuscript and appears as follows: As part of a larger study [21], research staff performance was rigorously calibrated…

Maybe explain floating subheading and mp abbreviation in text as these are both platform specific?

Bear in mind the audience!

The first appearance of .fs. in the text of the manuscript now appears with an explanation in parentheses as follows:
The single term, di.fs. (Ovid syntax for diagnosis as a “floating subheading”), produced the best sensitivity of 91.8% while keeping specificity at 76.4%.

The first appearance of .mp. in the text of the manuscript now appears with an explanation in parentheses as follows:
The single term, diagnos:.mp. (Ovid syntax for the appearance of diagnos: in any one of the title, abstract, or subject headings), produced the optimal balance between sensitivity (89.7%) and specificity (84.7%).

"Precision might be enhanced by combining search strategies in these tables with methodologic terms using the Boolean AND NOT and/or by combining search strategies with content specific terms or journal subsets using the Boolean “AND”. For the lay (i.e. non-information professional) reader (and even for those of us who had to read it several times to understand what you mean here) - could you explain for each approach what this would actually be doing e.g. "Precision might be enhanced by combining search strategies in these tables with methodologic terms using the Boolean AND NOT thereby..........." and "Combining search strategies with content specific terms or journal subsets using the Boolean AND and thus......".

The sentence in the text has been changed as follows:

Precision might be enhanced by combining search strategies in these tables with additional methodologic terms using the Boolean ‘AND NOT’ thereby reducing the possibility of retrieving studies of lower methodologic quality; however, this may decrease the sensitivity of searches. Precision might also be increased by combining search strategies with content specific terms (e.g., “diabetes”) or journal subsets using the Boolean ‘AND” thus reducing the volume of literature searched.
Which journal?: Appropriate or potentially appropriate for BMC Medicine: an article of importance in its field

What next?: Accept for publication in BMC Medicine after minor essential revisions

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests: I declare that I have no competing interests