Reviewer's report

Title: Meta-Analyst: software for meta-analysis of binary, continuous and diagnostic data

Version: 3 Date: 1 September 2009

Reviewer: Marie Elaine Westwood

Reviewer's report:

Major essential revisions:
The results and discussion sections should be separated. The current 'discussion and results' section is a good description of results, but a discussion of implications is needed. This should include a balanced discussion of the pros and cons of using MetaAnalyst versus other dedicated meta-analysis packages or general statistics packages such as STATA. A conclusion statement should also be added.

Minor essential revisions:
Addition of full description of operating requirements.

Discretionary revisions:
This work would greatly benefit from inclusion of some validation of the diagnostic analysis options. Though the body of work on test accuracy meta-analyses is smaller, data sets suitable for validation studies are available. Perhaps the Cochrane Screening and Diagnostic Tests Methods Group could be approached for assistance? The lack of validation of diagnostics functions need not, however, prevent publication at this stage.

General comments:
1. Does the software address a novel task? Alternatively, if there is already software available that performs this task, does the software outperform it in terms of speed, reliability, efficiency, or breadth of application?

All of the functions provided by MetaAnalyst can be performed in currently available software. However, I am aware of no simple package which is able to analyse both diagnostic accuracy and clinical effectiveness trial data. In this respect MetaAnalyst has the potential to provide a single analytical solution and increased convenience for organisations specializing in the conduct of systematic reviews. A major weakness is the current un-validated state of the diagnostic functions. As highlighted by the authors, the inclusion of regression analysis and cumulative meta-analysis options in an 'easy to use' package represents a significant advantage.

2. Is it easy to use?
Yes, very much so. The user interface is simple and includes useful screen
footnotes and there are a number of options for data input.

3. Does it satisfactorily address the task or application the authors intend?

Broadly yes, although the quality of some of the output plots (e.g. SROC) could be better.

4. Is the software freely available for non-commercial use (note that this is a condition of publication)? And is the availability of the software and any restrictions on use clearly stated in the manuscript?

Yes

5. Does the manuscript clearly describe the problem the software is designed to address

Yes

6. Does the manuscript clearly describe how the software is implemented?

Yes

7. Does the manuscript clearly describe how the software performs and its advantages / limitations over existing applications?

Yes a comparison of functions with those provided by existing options is included. Extensive validation against the output of existing packages is also reported.

8. Does the manuscript state the software's operating requirements

Not fully; manuscript states that MetaAnalyst runs only in the Windows operating system, but no version requirements are specified.

9. Are the discussion and conclusions of the manuscript well balanced and adequately supported by the data?

The paper presents a combined results and discussion section. In practice, this means that the focus is upon a description of the user interface and the validation process and discussion is somewhat lacking. A brief comparison with existing software options is give in the background section and Table 1; this comparison might be better presented as part of a separate discussion section, which should clearly describe what the new software adds. It seems likely that MetaAnalyst will also have some potential disadvantages when compared to more complex and wide ranging statistical packages such as STATA; a balanced discussion of the pros and cons of using each should therefore be included. At present, there is no specifically stated conclusion.

10. Do the title and abstract of the manuscript accurately convey what has been found?

Yes
11. Is the writing acceptable?
Yes, clear and well presented.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

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