Author’s response to reviews

Title: Meta-DiSc: a software for meta-analysis of test accuracy data

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Author’s response to reviews: see over
Madrid, June 19th, 2006

Dear Editor,

Please find enclosed a revised version of the paper entitled “Meta-DiSc: a software for meta-analysis of test accuracy data” (MS: 1173939116993440).

We would like to thank the reviewers for their input about our manuscript and the software itself.

The comments of the reviewers have been very helpful to improve the manuscript and they also have raised some questions which caused the software to improve. A new version of the software (ver 1.4) has been released and is available at our web site (http://www.hrc.es/investigacion/metadisc_en.htm)

In this letter, we will reply to all comments and clarify the changes made in the manuscript. Please find enclosed the revised manuscript, including text, tables, figures and an additional file with a dataset to help users to validate the software. All changes in the manuscript are made with the ‘track changes’ option of Microsoft Word activated.

We do hope that the revised manuscript is satisfactory and will be accepted for publication in BMC Medical Research Methodology.

Kind regards,

Javier Zamora, PhD
Reply to the reviewers:

REFEREE 1.

**Minor essential revisions.**

1. According to the reviewer’s suggestion, we have changed figure 1. Instead of a flow-chart, the figure is now a series of tools implemented in the software to perform different steps of meta-analysis of diagnostic tests.

2. Following reviewer’s suggestion we have added the following sentence in the meta-regression subsection of the paper:

   “Using dOR as a global measure of accuracy is a suitable method to compare the overall diagnostic accuracy of different tests [13]. However, its use is limited because it cannot be used directly in clinical practice and, furthermore, because possible opposing effects of a study characteristic on sensitivity or specificity may be masked by using dOR.”

3. We have introduced references to some of the published meta-analyses using Meta-DiSc. [23-28]

4. We have added references [10, 20] to cite methods implemented in the software to fit sROC curves.

5. A brief table (table 1) comparing Meta-Disc outputs with STATA software is provided.

6. We clarified the data-set used to generate the sROC curve of figure 8.

7. The reviewer detected an inadvertent error in figure 6. We have corrected accordingly the title of the figure.

8. According to reviewer’s comment, we have added more details for operating requirements of the software. That section now reads:

   “The software runs on Windows based personal computers (Windows 95 or higher) with Pentium-class processor or equivalent, with minimum of 32 MB of RAM and minimum of 20 MB of hard disk space. SVGA color monitor; minimum 800x600 screen resolution and 256 colors.”

**Minor discretionary revisions.**

1. We have changed the manuscript following reviewer’s suggestion.

2. We would like to maintain the two ideas together in the same sentence to remark the idea of the increasing emphasis being given to evidence based diagnosis.

3. Following reviewer’s suggestion, we have added the sentence: “Meta-DiSc provides analysts with adequate tools to assess the appropriateness of pooling”

4. Items 4 to 14 have been addressed according to reviewer’s suggestions.
REFeree 2

GENERAL COMMENTS
Following reviewer’s general comments, some improvements have been done (as is the program provides now with an estimation of between study variation (random effects parameter) and others have been scheduled to be implemented in the software in the very near future (as is the ability to label points in the ROC space with specific study design characteristics). We expect a new version of the software will be available during summer’ 2006.

DISCRETIONARY REVISIONS.
1. We have added a reference to Hierarchical sROC approach.

“there are a number of other more advanced methods not implemented in Meta-DiSc that allow to incorporate explicitly information about tests thresholds defined between or within studies [17]”

And we added also a comment about the potential correlation between sensitivity and specificity arising due to the effect of factors different to threshold.

“It is worth noting that correlation between sensitivity and specificity could arise due to a number of reasons other than threshold (e.g. partial verification bias, different spectrum of patients or different settings).”

2. Following reviewer’s suggestion, we have added a mention to the shortcomings of Moses and Littenberg model and we also mention and reference Hierarchical sROC and bivariate analysis. We added the following paragraph:

“more advanced meta-regression techniques such as Hierarchical sROC model [17] and bivariate analysis of sensitivity and specificity [19] has been developed. These methods overcome some of the statistical shortcomings inherent to Littenberg and Moses model [8,19].”

3. No comments.

4. We agree with the reviewer about the risks of inappropriate analysis having at hand all available statistics. We emphasised this risk in the implementation section of the paper.

5. We have introduced some changes in the algorithm of estimation of the model of Moses and Littenberg to correctly account for between-study random variations. These changes are cited in the paper along with a reference to relevant statistical methods [16].