Is it time to do away with conclusions in systematic reviews?

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Evidence-based medicine (EBM) was introduced as a new paradigm about two decades ago. Systematic reviews are the basis on which evidence-based decision-making must take place. Much has been written about systematic reviews, including our previous editorial to describe the process and its advantages (1).

Systematic reviews have a well-defined structure and objectives. They take considerable time and effort to prepare and update. Cochrane (systematic) Reviews have additional advantages: they follow a standardized format; the methods to prepare them follow strict protocols; and, where appropriate, they present the results of each trial included in the review graphically, with the possibility of conducting meta-analysis with summary estimates such as relative risk or odds ratio, and heterogeneity tests. The characteristics of each study included in the review and the overall results are presented in tables in a structured, standard format. These special features render these reviews completely transparent in terms of the data, the inclusion and exclusion criteria, and the nature of analysis applied to the data.

By virtue of being published in electronic format, each Cochrane Review is updated as new data become available, or as other ways of improving them are identified for example, in response to comments from readers. These features are innovative and make Cochrane Reviews stand apart from other reviews published in print journals. The fact that Cochrane Reviews emphasize complete transparency and provide easy access to all data included in the review allows readers to reach their own conclusions from the results presented. This can be regarded as a "democratic" approach to medical learning as opposed to the “hierarchical” approach of learning from experts or peers.

Like other scientific articles, Cochrane Reviews include an "author's conclusions" section, both in the abstract and the end of the main body of the review. We believe that while reading these sections readers should keep in mind that these sections present the conclusions of the **author(s) and not necessarily the conclusions of the research.** The author's (or authors') conclusions represent his/hers (or their) interpretation of the results, and by definition interpretations are subjective . Hence the conclusions sections may contain the reviewer’s biases and may cast a shadow on the credibility of the whole review. Unfortunately, the abstract and the conclusions at the end of the text are probably the parts that are most often read first, and perhaps sometimes are the only parts read!

Of course this problem is not unique to Cochrane Reviews. Discrepancies between results and conclusion sections have been recognized for some time. Tyson et al (2), found that of 86 reports of primary studies published in leading obstetrics and gynaecology journals, only in 10% were the recommendations and conclusions supported by the data. In the case of Cochrane Reviews, of the 53 reviews published

in *The Cochrane Library,* 1998, Issue 1, the conclusions were not supported by the data in 17% (3). In spite of this, the clear description of inclusion and exclusion criteria and assessment of the quality of the trials included in Cochrane Reviews render them less prone to bias compared to standard reviews published in print journals (4).

It can be argued that the blame for this problem lies with peer reviewers and editors of journals including us. Editors of journals would argue that the mismatch between results and discussion/conclusions is one of the important reasons for rejection of scientific articles. Although editors and peer reviewers strive hard, clearly more needs to be done to tackle this problem.

In the case of Cochrane Reviews in particular, one way of addressing the problem may be to remove the conclusions section from the reviews. The idea of restructuring scientific reports is not new. There have been calls for restructuring study reports by combining the results and discussion sections to reduce duplication and make the manuscript easier to read (5), and, the issue of removing the conclusions section has been discussed within the Cochrane Collaboration. We feel that this idea should be debated. If this type of bias occurs often it could have a significant negative impact on the uptake of results of the reviews and could impair the implementation of effective practices.

In keeping with our philosophy of rigorous evaluation of relevant public health questions, we are conducting an empirical evaluation of the frequency of discrepancies between results and conclusions in the 70 systematic reviews included in RHL 5. We expect to report results in 2002. In the mean time we urge readers to exercise caution while considering the conclusions in systematic reviews and urge them to go directly to the body of the review, especially the description of included trials, the reasons for excluding trials and the tables of results.

We appreciate that not all readers of Cochrane Reviews will have the skills and training needed to make independent interpretations of the results. Our message to the readers of RHL is that if you have problems in interpreting the data approach a colleague who has a background in statistics or epidemiology and if you cannot find such a person send us an e-mail explaining the specific problem and we may be able to help. It would also be helpful to attend a course in critical appraisal and systematic reviews. RHL editors conduct similar courses worldwide. In doing so, you will maximise the use of the systematic review, evaluate the results vis-à-vis your patients needs and be an active participant in the continuous update of information to guide medical practice. We need to avoid replacing one type of "expert" for another or, as the Latin American saying goes, keep the same dog but only change the leash!

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REFERENCES

1. Villar J, Gülmezoglu AM, Khanna J, Carroli G, Hofmeyr GJ, Schulz KF, Lumbiganon P. Evidence-based reproductive health in developing countries. *The WHO Reproductive Health Library, No 2, Geneva, World Health Organization*. 1999, (WHO/RHR/HRP/RHL/2/99).

2. Tyson JE, Furzan JA, Reisch JS, Mize SG. An evaluation of the quality of therapeutic studies in perinatal medicine. *The journal of pediatrics* 1983;102:10-13.

3. Olsen O, Middleton P, Ezzo J, Gotsche P, Hadhazy V, Herxheimer A, Kleijnen J, McIntosh H. Quality of Cochrane reviews: assessment of sample from 1998. *BMJ* 2001;323:829-832.

4. Jadad A, Cook D, Jones A, Klassen TP, Tugwell P, Moher M, Moher M. Methodology and reports of systematic reviews and meta-analyses. *JAMA* 1998;280:278-280.

5. Collazos J. Rational structure of original research reports. *The lancet* 2002;358:174.

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