



How to referee a Cochrane Review

External Referees are primarily referred to the *Cochrane Handbook for Systematic Reviews of Interventions* for detailed information about the preparation of a Cochrane Review:
<http://www.cochrane.org/resources/handbook/index.htm>

How should a Cochrane review be prepared?

The aim of a Cochrane review is to assess systematically and thoroughly the best possible scientific evidence about the effects of a healthcare intervention(s). Everything about the review should aim to minimise the possibility of ending in a biased conclusion. So that means:

- the conduct of the review and its analyses should follow clear, pre-specified criteria – with checks along the way
- it should be easy to understand
- any conflict of interest of the people doing the review should be declared
- effort must be made to find every possible study that might be eligible for the review
- the studies included in the review's final analyses should be ones which have as little bias in them as possible
- outcomes that are important to the consumers of the interventions must be considered - whether or not they have been measured by researchers - to avoid conclusions being based on a narrow picture
- the final review should follow the pre-specified criteria, addressing all the important issues originally raised, and highlight any issues and gaps in the information that should be addressed by researchers in future.

Cochrane reviews are published in full in the *Cochrane Database of Systematic Reviews* (CDSR), one of several databases in *The Cochrane Library* [www.thecochranelibrary.com], can be commented on by anyone, and can be corrected or have new research added in future updates.

What is required of a Referee?

Prior to publication, all reviews must be refereed externally by at least three people. Referees are people with content, methodological or consumer expertise in a particular topic. Referees should not have direct financial or personal conflicts of interest concerning the topic addressed.

What is the Process?

Once a person agrees to be a referee of a Cochrane Review, they are sent a copy of the Protocol or Review (normally as a HTML document), a checklist for comments (to be returned to the Group) and this Referee's Guide. We ask referees to submit courteous and constructive comments on the Review that identify its weaknesses or fatal flaws, as well as ways of improving it. Referees are usually requested to return these comments to the Oral Health Review Group within four to six weeks, though the date may alter depending on the date of the next publication upload. It is obviously better all round if the referee comments are returned sooner rather than later. The final version of the Review has to be approved by the Editorial Team prior to its publication on *The Cochrane Library*.

What is a Protocol?

Cochrane reviews go through two stages of development. At first, people who want to do a review propose a title, with an outline of what the review would address. They need to get this title accepted and registered by a Cochrane review group before they can start.

Registration of the title means the authors can then get to work on developing the protocol – the next stage of the review. A protocol should set out clearly why the review is needed, what the review is going to be about, and how the authors are going to do it. The protocol is the vehicle for publicly setting out the pre-specified criteria that the authors must follow. It is published in *The Cochrane Library*. People can send in comments on protocols in the same way as they can comment on or criticise full reviews.

A protocol has several sections (outlined below) that are kept as the introductory parts of the final review.

Style of writing:

The text of the review should be clear and to the point - it should not be overly long. It should be written so that someone who is not an expert in the area can understand it.

Title:

The name of the review should properly reflect the subject of the review, and it should be easy to understand.

Background:

This should explain the topic being reviewed, including the biological basis of a disease or condition, and the health care offered. The background should make the motivation and rationale for the review clear.

Objective:

This should have a precise statement of the primary objective of the review, including the intervention(s) reviewed and the problem addressed. It can also mention why the review is being done, and how it might relate to a wider review of a general problem.

If there are hypotheses for the review (specific theories or suggestions being tested), these should be stated here. The comparisons that are listed later in the review should be consistent with any hypotheses described here.

Selection criteria:

This section has several parts. Together, they should make it clear which studies can be included in the review, and which will not be eligible. The aim is to come up with very specific guidelines for deciding whether a study addresses the objective of the review. This section is supposed to make the reasons for including a study so clear, that anyone else could come along, apply the criteria, and come to more or less the same decisions. Later, the quality of studies that make it past this first test will also be assessed.

This section includes:

Type of interventions: An intervention is anything that is meant to change the course of events for someone. Surgery, a drug, a test, a treatment, counselling, giving someone a pamphlet - all of these are interventions.

Type of outcomes: The outcomes that the authors are going to look for in each study should be listed here. This should include all the most important outcomes which need to be considered to make decisions about the particular intervention. These need to be specified ahead of time. The studies may not address particular outcomes - in which case it is important for the authors to know that important topics have been overlooked.

If an outcome is an important key to understanding or assessing the impact of an intervention, this needs to be stated now. Coming up with theories about outcomes later does not have the same scientific strength.

Type of participants: This needs to state which groups of people can be included in any studies. For example, some reviews might be looking only at children or people over a particular age. Or they might be looking only at people with a specific disease, of a particular severity (for example, a particular level of high blood pressure).

Type of studies: This specifies the design of the studies that will be eligible – usually controlled trials. The aim is to include study designs which minimise the chances of the results being biased. Bias is something that introduces a difference or trend that distorts (or could distort) the results. Bias is a systematic error that will run through the study, because what is observed may not be the effect of the intervention, but an effect of bias instead. An example is when everybody knows they have received a new “breakthrough” treatment - just knowing that might make people feel better, while the people who “missed out” might be very dissatisfied and feel worse because of it.

Search strategy for the identification of studies:

This section shows how and where the authors have looked for studies that could be eligible for the review. The Cochrane Oral Health Review Group has a register of trials eligible for the whole area of study; therefore the authors could refer to the strategy the group used to find them. (That strategy will not then appear in the protocol - people would need to refer back to the review group's general information to find it.)

A search strategy can include any databases that are searched, checking through the lists of references of relevant articles and books, checking through the proceedings of conferences that present research results and personal contact with experts or institutions that could have relevant material. Any journals to be handsearched (that is, looking through all the copies of the journals) should also be listed. Cochrane reviews are meant to try and identify both published and unpublished studies.

Many databases have particular coding systems used to index all the studies in them. Thus, a particular word becomes a term that may cover several issues. The most common search language is MeSH (the Medical Subject Headings developed by the National Library of Medicine in the USA). A search strategy should list the search terms being used, and identify any limitations on the search (such as if they are only looking for studies in English).

Methods:

This section should spell out the steps of the review - who is going to do what, and according to what standards and criteria.

Having decided which studies are eligible for consideration, the authors then will need to decide which studies were done well enough. If the study was done badly, the results may not be reliable enough, so it could be excluded. This section of the protocol should make it clear how the quality of studies is going to be assessed, what the criteria are going to be, and what checks there will be on these steps. As with the selection criteria, the aim is to be so clear and specific that someone else applying the same methods would come up with more or less the same results.

The authors should include here the statistical methods they will use, and any sensitivity or subgroup analyses they plan to do (see below). As with outcomes, these need to be specified up front. Coming up with theories about what causes any differences in results afterwards is less reliable than establishing differences based on a rationale put forward beforehand.

A sensitivity analysis involves re-analysing the results without particular studies to see if they are skewing the results. Sensitivity analyses try to find out if there are reasons to explain heterogeneity in results (differences in results from study to study). As with search strategies, some review groups may have a statistics policy and a set list of sensitivity analyses that all authors should do (such as seeing if there are differences in studies of lower quality, or those done in different countries). The protocol might then just refer people to the review group's policy on this. This is not yet the case with the Cochrane Oral Health Group.

A subgroup analysis means looking for differences in particular groups of people -for example, seeing if the results are different for men and women. Again, these need to be specified ahead of time to safeguard against coming up with theories that could be just a coincidence. If there is a reason to speculate that the results might be different for particular subgroups of people, then that should be specified in the protocol.

Conflict of interest:

Authors should report here any conflict of interest capable of influencing their judgments, including personal, political, academic, and other possible conflicts - particularly financial. It is impossible to abolish all conflict of interest, since the only person who does not have some vested interest in a subject is somebody who knows nothing about it at all, and who cannot be affected in any way.

However, any interest that could unduly influence judgements in a review (such as deciding which studies can stay in, or what the results mean) needs to be declared.

Financial conflicts of interest in particular need to be declared. This includes the receipt of any benefit in cash or kind, any hospitality, or any subsidy derived from any source with an interest in the results of the review. Any sponsorship or funding of the review needs to be declared.

References:

References for every article or book identified in the text need to be listed.

What is a Review?

A Review follows the strategy and methods outlined in the Protocol, to assess systematically and thoroughly the best possible scientific evidence about the effects of a healthcare intervention(s). It adds several sections to the protocol, outlined below:

Synopsis or plain language summaries:

These should be a short statement sentence of no more than 25 words, followed by a line break and a short paragraph summarising in plain language what the review was about and what it found in between 50 to 100 words.

Description of studies:

This should refer to the information contained in the 'Characteristics of Included Studies' and the 'Characteristics of Excluded Studies' tables. It should describe key characteristics of the study participants, interventions and outcome measures in the included studies and any important differences among the studies. The sex and age range of participants should be stated here unless it is obvious (e.g. if all the participants are pregnant). Authors should note any other characteristics of the studies that they regard as important for readers of the review to know.

Methodological quality of included studies:

This should describe the general quality of the included studies and any important flaws in individual studies. If the quality of each study was assessed using explicit criteria, the criteria that were used should be described or referenced under 'Methods'. How each trial scored on each criterion can be summarised in this section or, preferably, included in the 'Characteristics of Included Studies'.

Results:

This should be a summary of the main findings of the review and any sensitivity analyses that were undertaken. Subheadings can be used if they make reading easier (e.g. for each prior hypothesis if a review addresses more than one). The results of individual trials, and any statistical summary of these, should be included in Data tables. Authors should avoid making inferences in this section. A common mistake to avoid (both in describing the results and in drawing conclusions) is the confusion of 'no evidence of an effect' with 'evidence of no effect'.

Discussion:

This should include brief comments on any methodological limitations of the included studies and the review that are important for decisions about practice or future research. Comments on how the included studies fit into the context of other evidence might be included here, stating clearly whether the other evidence was systematically reviewed. Comments on how the results of the review fit into the context of current clinical practice might be included here, although authors should bear in mind that current clinical practice might vary internationally.

Authors' conclusions:

The primary purpose of the review should be to present information, rather than to offer advice. *Implications for practice* and *Implications for research* are subheadings in this section. The implications for practice should be as practical and unambiguous as possible. They should not go beyond the evidence that was reviewed. 'No evidence of effect' should not be confused with 'evidence of no effect'. The implications for research should not include vague statements such as 'more research is needed'. Authors should state exactly what research is needed, why and how urgently. Opinions on how the review might be improved with additional data or resources might also be included here.

Acknowledgements:

This section should be used to acknowledge any individuals or organisations who the authors wish to acknowledge but who have not made a sufficient contribution to the review to be included in the Contributions section.

Tables and figures

Characteristics of included studies:

This is a standard table with seven columns: study ID, methods, participants, interventions, outcomes, notes and allocation concealment. Authors must decide what characteristics of the included studies are likely to interest users of the review. It is possible to use codes so that each column can include several subcategories of information; e.g. a author could include country, setting and sex under 'participants'. Information on the funding of a study could be included under 'notes'. Footnotes should be used for explanations of any abbreviations used (these will be published in the CDSR). Authors must also include information about the 'Data source' for all included studies to indicate whether published data only, unpublished data only or a mixture were used, or if unpublished data were sought but have not been used (e.g. because they have not been obtained).

Characteristics of excluded studies:

Any studies meeting the inclusion criteria, or appearing to meet the inclusion criteria, that were excluded should be identified and the reason for exclusion should be given (e.g. inappropriate control group).

Characteristics of ongoing studies:

This is a standard table with seven columns: Study ID, Trial name or title, Participants, Interventions, Outcomes, Starting date, Contact information and Notes. Footnotes should be used for explanations of any abbreviations used in the table (these will be published in the CDSR).

Comparisons and data:

A review can include more than one comparison and a study can be included in more than one of these. The comparisons should correspond to the questions or hypotheses under 'Objectives'. Data for each comparison must be entered in a standardised format from which tables and figures for each comparison can be generated. Authors should try to avoid listing many comparisons or outcomes for which there are no data in the review since each comparison generates a graph even if it contains no data and analysis. Instead, authors should note these comparisons in the text of their review. Four types of tables are possible: dichotomous data, continuous data, individual patient data and other data.

If you have any queries, please contact:

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