Audit of the abstract, plain language summary and summary of findings tables in published Cochrane Reviews

Based on the findings of this audit we make the following recommendations:

1. Increase the word limit of abstracts from 400 to an absolute limit of 1000 words, and encourage authors to make abstracts no longer than 700 words. This recommendation was approved at the mid-year meeting in 2011 and has since been implemented.

2. During the project we acknowledged that some features of an abstract seem more critical than others. In particular, we propose the following core set as important criteria:

   - Clear description of the question addressed by the review
   - Explicit description of the intervention(s) and comparisons
   - Inclusion of the date(s) and scope of search(es)
   - Comment on the risk of bias of included trials
   - Description of the number of trials and participants in the review
   - Clear and consistent description of results for important outcomes, including a comment if no studies measured them
   - Absolute effects should be reported alongside relative effects in the abstract as they appear in other parts of the review (e.g. Summary of Findings (SoF) tables or as natural frequencies/numbers needed to treat (NNTs) given in the text of the review)
   - Full and consistent reporting of benefits and harms and overall conclusions across the abstract, plain language summaries (PLSs) and SoF tables

We anticipate that this set of criteria will contribute to the outputs of the MECIR project and reporting guidelines for abstracts of systematic reviews being developed by PRSIMA.
3. Regardless of whether there is an expectation to include SoF tables in Cochrane Reviews, tables which are presented under this title should contain the core features of a SoF table as described by the GRADE working group.

4. The CEU will conduct a follow-up audit focusing on consistency between review summaries and omission of key information from abstracts.

**Background**

The abstract, PLS and SoF tables summarise key information contained in Cochrane Reviews. These summary versions of a review fulfill distinct functions in that they are written with different users in mind, they are displayed and read outside *The Cochrane Library*, or in the case of SoF tables, they appear prominently within the published review on *The Cochrane Library*.

It is likely that over the lifetime of an article, its abstract will attract a larger readership than the full-text version.\[1\] The prominence of article abstracts on the Cochrane Collaboration website and in biomedical literature indexing databases means that they are often the first part of a review to be accessed by many readers, who may decide to read the full-text article based on the information in the abstract. To this end, Cochrane Review abstracts should be clear, concise, accurate, and consistent with findings presented in the PLS and any SoF tables associated with the review.

Following an audit of abstracts presented at a workshop during the 2010 Cochrane Colloquium, and a discussion at the joint meeting of Co-ordinating Editors, Managing Editors and Trials Search Co-ordinators, the Cochrane Editorial Unit (CEU) decided to pilot an assessment of abstracts, PLSs and SoF tables for Cochrane Reviews. This pilot was intended to establish whether recommendations for abstracts and PLS in the *Cochrane Handbook for Systematic Reviews of Interventions* (*Cochrane Handbook*)\[2\] were being followed, and to assess the quality of the tables presented as SoF tables.

**Methods**

A team from the CEU developed a checklist based on criteria outlined in Chapter 11 of the *Cochrane Handbook*. The items were circulated to the executives of the Co-ordinating Editors, Managing Editors and Trials Search Co-ordinators for comment. The final checklist used in the audit contained 20 items (*Appendix 1*). We assessed the abstracts, PLSs and SoF tables (if present) against the checklist for each new intervention review published between Issue 2, 2011 and Issue 4, 2011 of *The Cochrane Library*. 
Abstracts were double-appraised, with each criterion in the checklist scored as having been met, not met, or not applicable. At the end of the appraisal we counted the number of criteria not met. The absence of a SoF table was not a criterion for downgrading. Where items were considered not to have been met by the appraiser, a comment was included to justify the decision. Disagreements were resolved through discussion. We shared each checklist reflecting the merged assessments with the publishing Cochrane Review Group (CRG). We restricted the assessment of the SoF tables to whether the information that they contained made them appropriate to be presented as SoF tables.

Results

Between Issues 2 and 4, 2011 of The Cochrane Library, 82 new intervention reviews were published, of which, 32 (39%) had a SoF table. The median number of criteria not met within each Cochrane Review was 3 (range 0 to 12). Thirty-four CRGs published one or more new reviews during the audit period, with a median of 2 reviews (range 1 to 7).

Figure 1, page 4 shows the number of criteria not met by all the 82 Cochrane Reviews assessed. It identifies two principal sources of concern, namely: inconsistency (either within the abstract or between the abstract and PLS), and omission of key information (search dates, selection criteria, study characteristics, risk of bias and harms). Further issues were identified around the description of statistical results (the size and direction of effect not being clear and data by treatment group not being reported), and a number of the SoF tables not conforming to recommendations about their format.

Inconsistency

Inconsistency between the abstract results and conclusions

Selective presentation or selective emphasis introduced inconsistency between the results and conclusions of the abstract in 16 reviews (20%). In one example from a multiple comparison review we identified selective emphasis in conclusions: benefits of an intervention with statistically significant results were described in the conclusions, whereas non-significant findings from other comparisons given in the results section of the abstract were not mentioned. In another review benefits on secondary outcomes were reported in the conclusions without reference to the non-significant results from the primary outcomes listed in the results section.
Inconsistency between the abstract and PLS

Discrepancies between the findings reported in the abstract and PLS were also a concern in a few cases. We identified some discordance between the abstract and PLS in 28% of reviews from our sample. We considered this to be particularly problematic if the two summaries were read in isolation, and created differing impressions about the effects of interventions, for example:

Cont./
Example 1: Different levels of detail in reporting

Results as presented in abstract:
‘Educational interventions were ineffective with respect to [outcome] at 12 months.’

Results as described in PLS:
‘... when the study with the lowest quality was excluded, there was a small positive effect on [outcome] at 12 months.’

In the example outlined above, the PLS contains more information than the results provided in the abstract. The inconsistency in this instance was attributable to the fuller reporting in the PLS of the sensitivity analysis than was given in the abstract.

Example 2: Different inferences about harms

Results as presented in abstract:
‘Typical adverse events associated with [treatment] were infrequent.’

Results as described in PLS:
‘Arrhythmia, upper gastrointestinal bleeding and malignant hypertension may be related to [treatment].’

In this second example, there is not only more information about harms in the PLS than in the abstract, but a stronger link between treatment and harms is implied in the PLS than is given in the results.

In a third example the result given in the abstract was not qualified by the non-significance of the analysis results, which was given in the PLS:
Example 3: Differences in strength of results described

Results as described in the abstract:
‘[Intervention] has a faster [procedure] time compared with standard [intervention].’

Findings as given in PLS:
‘The findings of our work suggest that there is improvement in [procedure] time when using [intervention] compared with standard [intervention], although this is not statistically significant.’

Omission of key information from the abstract
Important information regarding selection criteria, date of searches, risk of bias or study characteristics was missing from 67 review abstracts (82%).

Information in the selection criteria (including restrictions on the target population) were absent from 18 abstracts (22%). This sometimes made it difficult to get a sense of the review question being addressed. We were unable to ascertain when the last search was conducted in 7 abstracts (9%) as no date was reported. In 12 review abstracts (15%), which included one or more trial, we could not gauge the number of participants included in the review.

Although a comment on the risk of bias in included studies is a reporting requirement in the full text of a Cochrane Review, this was not present in 42 review abstracts where included studies were described (51%). Twenty-two review abstracts (27%) did not provide a comment on either the characteristics of the studies or their comparability, which hindered assessing the applicability of the evidence. We also found reporting of harms to be omitted from 19 abstracts (23%), despite being reported or analysed in other parts of the review.

Description of statistical results
The most common criterion not to be met across the review abstracts was reporting of the relative effects in absolute terms: averages (continuous data) or event rates (dichotomous data) for both comparison groups were not described in 53 review abstracts (65%). We also identified a lack of clarity over the size or direction of effect in the analysis results reported in 17 abstracts (21%). Sometimes this was due to the use of standardised mean differences (SMDs) making the size of the effect given as a standard deviation unit hard to understand. In other instances where reviews compared two active treatments, the direction of the effect was not always clear. Non-standard
approaches included reporting the NNT in isolation from its associated relative effect. While this approach did not present the meta-analysis results given in the review, it had the advantage of conveying clearly the direction and size of the effect of intervention in absolute terms.

**SoF tables**

Of the 32 reviews with associated SoF tables, we came across three examples of tables that were not in the recommended format for a SoF. One table carried descriptions of the results by included study and not by outcome, one included a narrative summary of the findings of the review (effectively duplicating the PLS), and one table appeared to describe the characteristics of the studies included in the review. In one SoF table an overall rating of the quality of evidence was missing from three of the outcomes listed.

Deciding whether or not SoF tables should be mandatory is outside the remit of this project. However, if they are included, they need to be in the appropriate format.

**Good practice**

During the audit we identified the following aspects of reporting, which we considered good practice:

- Background sections carrying clear description of the condition of interest and why the review is important (such as controversy, emerging therapy, unchallenged orthodoxy or conflicting findings from existing research), or which identified the review as an update
- Labeling to distinguish between primary and secondary outcomes
- Reporting the number of studies and participants per outcome
- Re-expressing results from SMDs on specific scales
- Where GRADE quality ratings are reported in the abstract, there is also an accompanying reference to the GRADE methodology

**Discussion**

This audit of 82 new reviews published between Issues 2 and 4, 2011 has identified some key areas for improving the reporting standards across abstracts, PLSs and SoF tables in Cochrane Reviews.

We considered discrepancies within the abstracts or between the abstracts and PLSs to be the most serious, if not the most frequently encountered issue, to emerge from the audit. This was largely because the abstract and PLS are commonly read in isolation from the rest of the review, and
therefore consistency between these two summaries and the rest of the review is crucial. Information important enough to qualify the results in the PLS should be a feature of the abstract and vice versa. One possible explanation for the discordance between the abstract and PLS is the requirement for more than one summary of the review, and tailored messages within each for different audiences.

To varying degrees omission of key information from the abstract posed challenges in establishing the review question and its findings. During the process of the audit we noted with interest the word length of the published abstracts, and thought that this could influence the disclosure of information. The recommended 400-word limit for abstracts of Cochrane Reviews comes from an original truncation limit when the abstract is displayed in MEDLINE. Since 2000 this restriction has been changed to 10,000 characters, meaning that article abstracts over 400 words are usually published on MEDLINE without truncation.

The median word length in the 82 abstracts we assessed was 398 with an inter-quartile range of 370 to 431. The clustering of abstract lengths around the limit of 400 may reflect the recommendation given in The Cochrane Handbook and the associated validation warning in Review Manager. It is possible that abstracts are being composed or edited to come in under 400 words. One possible consequence of this is the loss of information that would otherwise provide a more complete picture about the review question and findings. For multiple comparison reviews this can be especially problematic due to the high number of outcomes that should be reported, making a 400-word summary difficult to generate without sacrificing content or introducing selective presentation of findings.

The most frequent criterion not to be met across the review abstracts was omission of information about event rates (for dichotomous outcomes) and averages (for continuous outcomes) from treatment groups contributing data to the reviews. Despite it being potentially useful to convey relative and absolute effects of an intervention, there is uncertainty as to how best to present this information reliably without compromising quality or abstract length.

Presenting relative effects from statistical results can be misunderstood without illustrating the effect in absolute terms.[3] However, for dichotomous outcomes the simple aggregation of risk as a single event rate may not always adequately reflect variation in control group risks.[2] Accurately expressing treatment effects in absolute terms requires careful consideration of the extent of
variation between control group risks, and may necessitate depicting more than one ‘population’ risk. To this end the range of illustrative and assumed risks often given in SoF tables could have an additional application in the review abstract, provided they have been carefully determined. For continuous data that reflect outcomes measured as change from baseline, complications arise with regard to the presentation of separate change scores in isolation from baseline values. For SMDs, the use of different scales across trials also makes separating mean scores by intervention and control groups problematic.

Reporting the results of seven or more outcomes in relative and absolute terms could mean adding substantial amounts of information. It may be advisable to consider restricting this to certain outcomes (such as those of primary importance as well as key secondary outcomes) or otherwise rely on concise ways of describing absolute effects.

Despite the areas of concern identified, the audit also found additional points of good practice. Many background sections provided a useful definition of the clinical condition of interest and why the review was important. Describing both of these aspects helps to set a clear context for the rest of the abstract. There is a tendency for review abstracts to report the number of included studies and participants in the review overall, but not on an outcome-by-outcome basis. Reporting the number of studies and participants for each outcome helps to clarify that only a subset of included studies provide data for meta-analysis. Transparent labeling of primary and secondary outcomes in review abstracts also helps to convey the main findings of the review. Where analysis results are reported on standardised scales, it is helpful to have the estimated effect reported in specific units alongside them. The increased uptake of GRADE methods in Cochrane Reviews in recent years has seen GRADE ratings become more common place in review abstracts. Since these ratings are drawn from a scale, referencing GRADE somewhere in the abstract helps to make a clear link between the ratings (e.g. ‘moderate quality’) and their meaning in the GRADE system.

The main focus of the audit was abstract quality, with additional considerations of consistency with the PLS, and appropriate formatting of SoF tables. The audit findings should be placed in the context of this aim. We did not intend to assess the overall conduct of the review or the reporting standards from all parts of the review. It is possible that by identifying inconsistencies and omissions at the level of the abstract and PLS, issues with other parts of the review could become more apparent.
References


### Appendix 1

Checklist based on criteria provided in *The Cochrane Handbook*[2](#) (Chapter 11)

<table>
<thead>
<tr>
<th>1. In the background section, does the abstract explain the context or elaborate on the purpose and rationale of the review?</th>
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<tbody>
<tr>
<td>2. In the objectives section, does the abstract include the following information: intervention or comparison, type of people, disease or problem, and setting (if specified)?</td>
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<tr>
<td>3. In the search methods section, does the abstract list the sources and the dates of the last search for each source?</td>
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<tr>
<td>4. In the selection criteria section, does the abstract include the following: type of study, intervention or comparison, and type of people, disease or problem?</td>
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<tr>
<td>5. In the data collection and analysis section, does the abstract include details of how many people extracted data?</td>
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<tr>
<td>6. In the main results section, does the abstract list the total number of studies included in the review?</td>
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<tr>
<td>7. In the main results section, does the abstract list the total number of participants included in the review?</td>
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<tr>
<td>8. In the main results section, does the abstract include brief details of the comparability of the studies, if applicable?</td>
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<td>9. In the main results section, does the abstract include brief details of the risk of bias of the studies, if applicable?</td>
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<td>10. In the main results section, does the abstract include the results of the primary outcome and no more than five other results?</td>
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<tr>
<td>11. In the main results section, does the abstract include whether or not adverse effects were identified, and if so, the findings?</td>
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<td>12. In the main results section, is there an explanation of the size and direction of effect to accompany the numerical results?</td>
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<td>13. In the main results section, are the summary statistics presented in a standard way, such as ‘odds ratio 2.31 (95% confidence interval 1.13 to 3.45)’?</td>
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<tr>
<td>14. In the main results section, are risks of events (percentage) or averages (for continuous data) reported for both comparison groups?</td>
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<td>15. Is the information in the main results and conclusions sections consistent with each other?</td>
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<tr>
<td>16. Does the abstract avoid making recommendations?</td>
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<td>17. Is there a summary of findings table(s)?</td>
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<tr>
<td>18. Is the summary of findings table(s) in the appropriate format?</td>
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<tr>
<td>19. Is the PLS title a clear re-statement of the title and not a conclusion?</td>
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<tr>
<td>20. Are the findings reported in the PLS consistent with those of the abstract?</td>
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