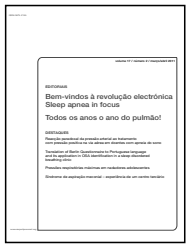
Rev Port Pneumol. 2011;**17(2):**96-103

revista portuguesa de
PNEUMOLOGIA
portuguese journal of pulmonology

www.revportpneumol.org



SÉRIES TEMÁTICAS

To publish or perish: How to review a manuscript

Publicar ou perecer: Como rever um manuscrito

J.C. Winck[a,*], J.A. Fonseca[b], L.F. Azevedo[b], J.A. Wedzicha[c]

[a]*Pulmonology Department, Faculdade de Medicina da Universidade do Porto, Porto, Portugal*
[b]*Biostatistics and Medical Informatics Department & CINTESIS, Faculdade de Medicina da Universidade do Porto, Porto, Portugal*
[c]*Academic Unit of Respiratory Medicine, UCL Medical School, Royal Free Campus, University College London, London, UK*

Received February 12, 2011; accepted February 28, 2011

History of peer review

The term peer review is used to describe a system whereby a paper is scrutinized by people who were not involved in its creation but are considered knowledgeable about the subject.[1] So it should be considered an evaluation by an expert on research of other experts in the same field.[2] Although well recognized, unfortunately this technique is not formally taught but may improve with practice.

In the past 50 years the use of peer review has become the "gold standard" by which biomedical journals judge their papers. The first description of peer review took place in 1731 with a report from the Royal Society of Edinburgh.[3] In 1893, the *British Medical Journal* and its editor Ernest Hart were among the first to implement a formal peer review system. However the necessity to implement this concept into medical journals took a long time, and only after the Second World War was peer review developed.[4] With the specialization of medical journals many editors recognized this need and in 1986, Drummond Rennie[5] in response to a letter in the *New England Journal of Medicine*[6] decided to organize a congress on Peer Review in Biomedical Publication. After this meeting in 1989, subsequent conferences took place adding to the considerable knowledge that we have today on this topic.[7-12] As a result, research into the editorial processes has evolved and now became evidence based editing.[13] Moreover the World Association of Medical Editors (www.wame.org) founded in 1995, was also created with the aim to foster international cooperation among and education of medical journal editors as well as to promote peer review as a quality assurance in medicine.[14]

Rationale of peer review

There is now evidence that peer review increases the quality of articles[15] and editors rely on peer reviewers to guarantee the appropriateness and scientific quality of the manuscripts they publish. However there is subjectivity in their role as demonstrated by studies showing lack of agreement between reviewers[16] and nationality biases (with US reviewers having a significant preference for US papers).[17] It is important that editors use grading instruments to assist in peer review and make formative assessment of their editorial competence.[18] Moreover use of several reviewers can also dilute the effects of a biased reviewer.

*Corresponding author.
E-mail: jwinck@hsjoao.min-saude.pt (J.C. Winck).

How are the reviewers chosen?

It has been shown that the reviewers that produce the best-quality report tend to be younger, work at top academic institutions or are known to the editors.[19] More recently, another study has come to the same conclusion and has advised on recruitment of reviewers among those with training in epidemiology or statistics, and near 40 years of age.[20] Moreover spending more than 3 hours on a review did not increase review quality[19] and written feedback to reviewers (other reviewers' reports and the editor's decision letter) produced no improvement in performance.[21] Of course one basic rule is that we should select reviewers who know the subject content of the work!

Although half-day workshop training did not improve subsequent review quality scores in average reviewers,[22] e-learning based and more intensive programs may be better and warrant investigation.

Most journal editors inherit a database of reviewers within different areas of expertise that can be expanded by identifying researchers with similar articles cited in MEDLINE. New electronic platforms allow the editor to track deadlines and record the performance of reviewers.

Typically Journal editors choose 2-3 reviewers, however having 2 or three reviews does no seem to change the rejection rate.[23]

There is some general belief that masking the reviewers to the identification of the authors may improve quality of peer review. Apart from not being easy to do as units can be readily identified, the success rate is low[12,24] and the effect is negligible.[25] More recently some journals started to implement open peer review (where the identities of the author and the reviewer are known to each other) and the results are encouraging[26] although more research is needed on the value of open review and also if this inhibits especially younger reviewers from taking part.

Concerning reviewer selection, some journals also invite authors to suggest up to four suitable peer reviewers for their work. Indeed, examining the submission of original papers to *Thorax,* Hurst et al[27] have shown the outcomes were not much different though author selected reviewers tended to be more positive, the first decision was more likely to be positive and discordance with the editor's final decision was significantly higher.

The editors should choose reviewers to obtain a balance between content expertise, methodological expertise and educational relevance.[28]

The reviewer has technical as well as ethical duties. Eight of the most important duties are summarized in Table 1 (adapted from ref 29).

So, the reviewer apart from wearing the hat of the journal's advocate should also wear the hat of the authors' advocate.[29]

Table 1 Reviewer's duties

Provide honest, critical assessment of the research
Maintain confidentiality
Avoid or disclose conflicts of interest
Accept to review only in his/her area of expertise
Agree to review only those manuscripts that can be completed on time
Report suspected duplicate publication, plagiarism, fraud or ethical concern
Write the review in a collegial, constructive manner

Good editorial practice

In a study performed in 1992, including the top 100 US journals, it was concluded that the review process was not uniform![30] So establishing uniform editorial practices is a major task!

Good editorial practice is well defined in the "Uniform requirements for manuscripts submitted to Biomedical Journals".[31] Every journal should accept, apply and follow good editorial practice (summarized in Table 2).[32]

Editorial decision-making should be directed at selecting the best manuscripts and those that better match their readership.

Table 2 Good Editorial Practice

Requirement	Comment
Format of manuscripts	Follow strictly the guidelines "Uniform requirements for manuscripts submitted to Biomedical Journals"[31]
Confidentiality	Manuscripts should be reviewed with due respect for author's confidentiality
Conflict of interest	Conflict of interest should be handled during writing, peer review and editorial decision making
Editorial freedom and integrity	Editors must have full authority for determining the editorial content of the journal and should respond promptly
Peer review system	Set up a reviewing system that selects reviewers by their field of expertise, explains thoroughly instructions to reviewers, controls reviewer performance (deadlines, quality of review),inform reviewers regarding manuscript's final disposition
Advertising	Editors should have full responsibility for advertising policy

How to review a manuscript: practical tips

The job of a reviewer is to assess the validity and importance of the work in the manuscript. The reviewers' reports will inform the decision of the journal editor that has the responsibility to accept or reject the paper. Reviewing a manuscript still remains a process based on the experience and personal background of the reviewer, as there is insufficient evidence to establish firm rules or recommendations. Nevertheless, different authors have put forward advices and practical tips based on experience.[2,33,34] Some of these practical tips are summarized below. While mostly directed to inexperienced reviewers these tips may drive experienced reviewers to critically reassess their practice. Also, authors can take them in consideration when planning, conducting and reporting their studies.

Decide prudently on accept/reject an invitation

Reviewing a paper is an opportunity to improve one's skills and an intellectual challenge. In some settings it is an activity with curricular value, in others an unrecognized, back-stage work. When an editor invites a prospective peer reviewer, he or she can be either tempted to hastily accept the invitation or reluctant in adding an extra task to a busy schedule. The knowledge in the field of the study, any conflicts of interest and the availability of time to do the review should be carefully considered before making a decision.

The pressure to have quick editorial decisions is very high. The success of a scientific journal rests heavily on the fast publication of good research papers. Therefore the time to deliver a review is now 2 to 4 weeks. The prospective peer reviewer should decline the invitation if he/she has doubts the deadline can be met. Three questions can be asked before accepting a review task – *a)* how familiar is the prospective peer reviewer with the research question and methods of the manuscript?; *b)* is there any conflict of interest such as personal relations with authors, competing research interests or any direct or indirect financial gain?, and *c)* does the prospective peer reviewer have the time to deliver the review report in the requested time frame?

Schedule enough time to the review before the deadline

As in many human activities, experience reduces the amount of time necessary to complete a task. A review report can take 10 hours or more for an inexperienced reviewer. Trained reviewers take about 3 hours to produce their report. When accepting to review a paper, schedule ahead and keep your schedule!

Always remember the reviewer should help to improve the manuscript

The reviewer should not act as an author, but has the responsibility to provide the authors with all comments and advices that helps the authors' work, even when suggesting the rejection of the manuscript. From time to time, the contribution of the reviewer is central for the success of a paper, for example by pointing out to the authors' new interpretation of the results improving the message of the paper.

Write reviews you would be satisfied with as an author

Always explain your comments and present them in a logical, positive and polite way. Support with references whenever useful. The criticisms should be specific not vague. Be decisive; suggest the precise changes that would improve the sentence, paragraph, table, etc. It is also important to be realistic, the recommendation to redesign the study can seldom be achieved. Use a neutral tone, for example generalizations such as "never" or "always" are to be avoided as they are unproductive and author can often find examples that contradict the comment. When reviewing, state the facts, do not make assumptions or try to guess reasons. Remember to point out the positive aspects of the manuscript. This is helpful to the editor and fair to the authors. Examples of some of the most frequent positive reviewers' comments are: *a)* important, timely, relevant, critical, prevalent problem; *b)* well-written manuscript (clear, straightforward, easy to follow, logical), and *c)* well-designed study (appropriate, rigorous, comprehensive design).[28]

The manuscript is the only source of information

The object of the review is the manuscript. The manuscript may also contain an on line supplement that needs to be assessed. The peer reviewer comments and recommendations should not consider previous or future work by the authors. No additional data or clarification is to be obtained from the authors during the review process. Also, one must assume what is reported closely describes what was planned and carried out during the study. If suspected otherwise the reviewer has the obligation to communicate his/her suspicions to the editor.

The manuscript is privileged information

The manuscript contains new data and ideas that should be kept confidential before publication. Reviewers should not use the information in their own research or for personal gain. In the exceptional case of a colleague becoming involved in the review process this should be communicated to the editor at the start of the review and be acknowledge by the reviewer in the report to the editor.

Organize your review – follow a systematic process

Address systematically the issues the Journal includes in the reviewers instructions and forms. Keep your review process as objective as possible. A point-by-point critique will be clearer and will help the authors to reply to all comments. Table 3 lists the main issues that the review report should address and questions the reviewers may ask to help addressing them.[29,35-38]

Top 10 reasons for manuscript rejection

A manuscript may be rejected at editorial level, before the editor sends it to reviewers. Often, the reasons for immediate rejection are being inappropriate for the journal's readers (wrong journal), not fitting any category of publication within the journal (wrong format) or not following the journal's instructions for submission. The paper will not be accepted if it addresses a topic outside the scope of the Journal or is in a style/format completely different from the rest of the Journal's content.[38]

After peer-review, the decision on the paper will depend on the comments presented by the reviewers and the editor's judgment about the priority for publication of the manuscript.

A few studies assessed the reasons for rejection of manuscripts in peer-reviewed journals.[28,40-42]

A summary of these reasons is presented in Table 4. Most of these reasons can be corrected by the authors when revising the manuscript. While unrelated to the study quality, poor writing style can have a strong influence on the overall impression of the manuscript by both reviewers and editors. The main issue in poor writing is difficulty in following the logical flow of the manuscript rather than grammar errors or language issues.

An important reason for failure to publish a paper is not revising and resubmitting the manuscript after the peer review. Too often authors give up after the first rejection or just chose another journal to submit the manuscript. A second submission to the same journal, after careful revision of the paper (based on the reviewers' and editors comments) will substantially improve the quality of the paper.

Writing the review

The process of writing the review report is quite personal. As a reviewer gets experience establishes his/her own routine. We find the personal example described by Frederic G. Hoppin, Jr. very useful to the beginner.[43]

Today, the reviewing process usually starts with an email from the editor with an invitation to review a manuscript. General details of the paper are included in the email. Also, the time frame to conclude the review and a link to accept or refuse are provided. Before having access to the full paper, the prospective peer reviewer should consult with the editors about any potential conflict of interest. If the invitation is accepted, access to the full manuscript is provided. At this time, the reviewer should reassess if the full text of the manuscript changes the decision to accept (is the content different from the abstract? Is there a conflict of interest previously undetected?).

Table 3 Issues of manuscripts to assess during the review process and questions to address them (adapted from references 33, 39)

Importance of the research question	The reviewer's knowledge of the field is central for judging the importance of the question. However, when the topic of the study is too close to the reviewer's own research special attention is necessary. Is your personal interest in the topic weighting too much on your judgment?
Originality of the work	Do use bibliographic searches and systematic reviews on topics related to the manuscript to assess originality. What is new in this manuscript? The question? Any methods? Does the data shed light to a pending controversy?
Relevance for the journals' readers	Put yourself on the role of the Editor: would the readers of this particular Journal be interested in this paper?
Usefulness for medical practice, teaching and science	A paper may be used to inform clinical decisions, for teaching purposes and for improving scientific knowledge. How useful will this manuscript be for each of these purposes?
Strengths and weaknesses (content, methodological, ethical)	How accurate and complete are the contents of the paper? Are the methods used able to answer the study question? What are the limitations of the study methods? Did the authors follow the research ethical principles and practices applicable to the study?
Validity of results and adequacy of its interpretation	Did the study methods and the way it was carried out ensure the quality of the results? Are there methodological checklist/guidelines that can help in assess the validity of the study? Do the authors' conclusions match the results observed and the aims described?
Clarity of the paper – structured, interesting writing and good, relevant tables and figures	Is the paper well structured? What about each paragraph? Is the writing style direct and appealing? The authors have chosen the best format (text, table, or figure) for the data presented? Are there too many (or irrelevant) tables or figures?
Suitability for publication	Considering all the various issues, is the manuscript quality adequate for scientific publication?

Table 4 Frequent reasons supporting reviewers' recommendation for rejection of a manuscript (adapted from 26 and 38)

Insufficient problem statement	Not defining clearly and completely the research question (what does the study aims to answer)
Incomplete, inaccurate, or outdated review of the literature	While not essential to the validity and interpretation of results, the review of literature can be viewed as an indication of how meticulous authors were in writing the manuscript
Poor Methods or study Design	Inappropriate or incomplete statistics
	Sample too small or biased
	Inappropriate or suboptimal instrumentation
	Inadequate description of the Methods
Suboptimal Reporting of the Results	Inaccurate or inconsistent data reported
	Insufficient data presented
	Defective tables or figures
Getting Carried Away in the Discussion	Over interpretation of results
Poor writing	Difficulty in following the logical flow of the manuscript

Before starting writing the review report a number of general questions help the reviewer to appraise the manuscript.[44]

— Why was the study done? Is it important?
— Have the authors adequately reviewed existing research?
— Does the work add enough to what is already in the published literature?
— Was there a clearly defined question?
— Was the design right for the question?
— Was the study ethical?
— Are the conclusions justified?
— Is there a clear message?
— Is it written in a clear, appealing style?
— Is this paper of interest to the readers of this journal?

In addition to these general questions it is very helpful to use specific checklists available to assess each study design. The EQUATOR network keeps updated resources on checklists and guidelines on reporting medical research literature.[45]

The review report is now usually performed online in a web application that often includes a review form, confidential comments to the editor (not available for the authors), the recommendation to the editor to accept or reject the paper and comments to the authors.

Most journals have a checklist or a form to be filled by the reviewer about the manuscript quality and its suitability/priority for publication in the Journal. This form aims to collect information more objectively and can help the reviewer to organize his/her opinions about the manuscript.

The "confidential comments to the editors" are a section of the review report not accessible to the authors. This is an opportunity for the reviewer to emphasize his/her views on why the manuscript is appropriate or not for that specific Journal. These comments should not repeat what was stated in the comments to the authors but rather to provide information to the editor to help his/her final decision.

The comments to the authors include the following:

1. A brief, one-paragraph summary with the reviewer's interpretation of the work. This helps the editor to remember the essence of the manuscript and ensure the authors the reviewer understood it.
2. The reviewer's recommendation to the editor; in general a manuscript can be considered acceptable to publication as is, with minor (optional) changes or with major (mandatory) changes or considered unsuitable for publication. If rejected, the reviewer can suggest the manuscript may be resubmitted to the same journal after correcting the problems identified. A useful global rating of the manuscript is: Accept, Accept Pending Revisions, Reconsider After Major Revisions, and Reject.[36]
3. General comments. Mostly on the quality, importance and novelty of the manuscript. For example, "The study design is not adequate to the research question" or "The manuscript is well structured and written in a clear manner".
4. Specific comments. These are related to a particular part of the manuscript. For example, "The number of participants that completed the study are 86 in table 2 and 89 in the last sentence on page 2, paragraph 5. Please clarify".

It is useful to address the issues in the manuscript in order of importance. Both general and specific comments can be organized in major and minor comments. Major comments include all the aspects that the reviewer feels need to be addressed before the paper is ready to be published.

A reviewer's comments should be direct, constructive and written as clear suggestions or observations. Avoid asking direct questions. These may result in answers by the authors without actual changes in the manuscript. Also, questions can have more than one answer making the authors uncertain on which answer the reviewer intended. The peer review is about the manuscript not the persons or groups who wrote it. Comments about the authors are inappropriate and do not contribute to the aims of peer-review. Also, the reviewer should try to minimize the influence of knowing the authors on the tone and contents of his/her comments.

Conclusions

Although peer review is not perfect and reviewers have a poor detection rate of errors in manuscripts,[46] it is the only available method to improve the quality of published papers. Until now nobody has produced a satisfactory alternative to it! The "gold standard" for the quality of any paper remains time-whether it survives a dozen years to be incorporated into review articles or textbooks.[47]

Journal editors have to continually audit their procedures and apply the results of others to their own practices.[47]

Reviewers receive very little preparation for performing reviews as part of their formal education, and short training interventions do not seem to improve their performance.[46]

However in these times of materialism, it is encouraging that there are large numbers of professionals who are willing to offer many hours of their time to work without financial incentive! Peer review is an important service to the Medical and Research Communities. Participating in this process is valuable, voluntary work and, for the reviewer, is also an enjoyable task (most of the times at least).

In the case of the *Portuguese Journal of Pulmonology* we have to keep the tradition of respect, collegiality and empathy in all interactions during the Peer Review process. We have to feel honored and privileged to be selected as reviewers and to have the opportunity to interact constructively and make the work well.

As Bruce Squires stated about the creation of World Association of Medical Editors: "the fundamental purpose of medical journals (and their editors) should be to promote the science and art of medicine and the betterment of health".[14]

References

1. Wager E, Godlee F, Jefferson T. What is peer review. In: Wager E, Godlee F, Jefferson T, editors. How to Survive Peer Review. London: BMJ Books; 2002. p. 3-12.
2. Sylvia LM, Herbel JL. Manuscript Peer Review—A Guide for Health Care Professionals. Pharmacotherapy. 2001;21:395-404.
3. Rennie D. Editorial peer review: its development and rationale. In: Godlee F, Jefferson T, editors. Peer Review in Health Sciences. London, England: BMJ Books; 1999. p. 1-13.
4. Burnham JC. The evolution of editorial peer review. JAMA. 1990;263:1323-9.
5. Rennie D. Guarding the guardians: a conference on editorial peer review. JAMA. 1986;256:2391-2.
6. Bailar JC, Patterson KJ. Journal peer review: the need for a research agenda. N Engl J Med. 1985;312:654-7.
7. Rennie D. Fourth International Congress on Peer Review in Biomedical Publication. JAMA. 2002;287:2759-60.
8. Guarding the guardians: research on editorial peer review. Selected proceedings from the First International Congress on Peer Review in Biomedical Publication. May 10-12, 1989, Chicago, Ill. JAMA. 1990;263:1317-441.
9. The 2nd International Congress on Peer Review in Biomedical Publication. Proceedings. Chicago, Illinois, September 9-11, 1993. JAMA. 1994;272:91-173.
10. Proceedings of the 3rd International Congress on Peer Review in Biomedical Publication. Prague, Czech Republic, September 1997. JAMA. 1998;280:213-302.
11. IV International Congress on Peer Review in Biomedical Publication. Barcelona, Spain, September 14-16, 2001. JAMA. 2002;287:2759-871.
12. Justice AC, Cho MK, Winker MA, Berlin JA, Rennie D. Does masking author identity improve peer review quality? A randomized controlled trial. PEER Investigators. JAMA. 1998;280:240-2.
13. Smith R, Rennie D. And now, evidence based editing. BMJ. 1995;311:826.
14. Squires BP. A global network for medical journal editors. CMAJ. 1995;152:1757-9, 62-4.
15. Goodman SN, Berlin J, Fletcher SW, Fletcher RH. Manuscript quality before and after peer review and editing at Annals of Internal Medicine. Ann Intern Med. 1994;121:11-21.
16. Rothwell PM, Martyn CN. Reproducibility of peer review in clinical neuroscience. Is agreement between reviewers any greater than would be expected by chance alone? Brain. 2000;123 (Pt 9):1964-9.
17. Link AM. US and non-US submissions: an analysis of reviewer bias. JAMA. 1998;280:246-7.
18. Garrow J, Butterfield M, Marshall J, Williamson A. The reported training and experience of editors in chief of specialist clinical medical journals. JAMA. 1998;280:286-7.
19. Evans AT, McNutt RA, Fletcher SW, Fletcher RH. The characteristics of peer reviewers who produce good-quality reviews. J Gen Intern Med. 1993;8:422-8.
20. Black N, van Rooyen S, Godlee F, Smith R, Evans S. What makes a good reviewer and a good review for a general medical journal? JAMA. 1998;280:231-3.
21. Callaham ML, Knopp RK, Gallagher EJ. Effect of written feedback by editors on quality of reviews: two randomized trials. JAMA. 2002;287:2781-3.
22. Callaham ML, Wears RL, Waeckerle JF. Effect of attendance at a training session on peer reviewer quality and performance. Ann Emerg Med. 1998;32(3 Pt 1):318-22.
23. Schultz DM. Are three heads better than two? Scientometrics. 2010;84:277-92.
24. Cho MK, Justice AC, Winker MA, Berlin JA, Waeckerle JF, Callaham ML, et al. Masking author identity in peer review: what factors influence masking success? PEER Investigators. JAMA. 1998;280:243-5.
25. Godlee F, Gale CR, Martyn CN. Effect on the quality of peer review of blinding reviewers and asking them to sign their reports: a randomized controlled trial. JAMA. 1998;280:237-40.
26. Van Rooyen S, Delamothe T, Evans SJ. Effect on peer review of telling reviewers that their signed reviews might be posted on the web: randomised controlled trial. BMJ. 2010;341:c5729.
27. Hurst JR, Howard EC, Wedzicha JA. Reviewer selection: author or editor knows best? Thorax. 2005;60:799.
28. Bordage G. Reasons reviewers reject and accept manuscripts: the strengths and weaknesses in medical education reports. Acad Med. 2001;76:889-96.
29. Benos DJ, Kirk KL, Hall JE. How to review a paper. Adv Physiol Educ. 2003;27:47-52.
30. Frank E. Editors' Requests of Peer Reviewers: A Study and a Proposal. Preventive Medicine. 1996;25:102-4.
31. Uniform requirements for manuscripts submitted to biomedical journals. International Committee of Medical Journal Editors. Ann Intern Med. 1997;126:36-47.
32. Marusic M, Marusic A. Good editorial practice: editors as educators. Croat Med J. 2001;42:113-20.
33. Moher D, Jadad AR. How to peer review a manuscript. In: Godlee F JT, editor. Peer Review in Health Sciences. 2nd ed. London, England: BMJ Books; 1999. p. 183-90.
34. Bourne PE, Korngreen A. Ten simple rules for reviewers. PLoS Comput Biol. 2006;2:e110.
35. Van Rooyen S, Black N, Godlee F. Development of the review quality instrument (RQI) for assessing peer reviews of manuscripts. J Clin Epidemiol. 1999;52:625-9.

36. Provenzale JM, Stanley RJ. A systematic guide to reviewing a manuscript. AJR Am J Roentgenol. 2005;185:848-54.
37. Roberts LW, Coverdale J, Edenharder K, Louie A. How to review a manuscript: a "down-to-earth" approach. Acad Psychiatry. 2004;28:81-7.
38. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. J Epidemiol Community Health. 1998;52:377-84.
39. Jefferson T, Wager E, Davidoff F. Measuring the quality of editorial peer review. JAMA. 2002;287:2786-90.
40. Pierson DJ. The top 10 reasons why manuscripts are not accepted for publication. Respir Care. 2004;49:1246-52.
41. Von Elm E, Costanza MC, Walder B, Tramer MR. More insight into the fate of biomedical meeting abstracts: a systematic review. BMC Med Res Methodol. 2003;3:12.
42. Scherer RW, Dickersin K, Langenberg P. Full publication of results initially presented in abstracts. A meta-analysis. JAMA. 1994;272:158-62.
43. Hoppin FG, Jr. How I review an original scientific article. Am J Respir Crit Care Med. 2002;166:1019-23.
44. Wager E, Godlee F, Jefferson T. Methodological review checklists. In: Wager E, Godlee F, Jefferson T, editors. How to Survive Peer Review. 2nd ed. London, England: BMJ Books; 2002. p. 51-5.
45. Available from: http://www.equator-network.org/ [cited 2010 Dec 19].
46. Schroter S, Black N, Evans S, Godlee F, Osorio L, Smith R. What errors do peer reviewers detect, and does training improve their ability to detect them? J R Soc Med. 2008;101:507-14.
47. Lock S. Does editorial peer review work? Ann Intern Med. 1994;121:60-1.

Appendix: Checklist for the assessment of manuscript quality

Title of manuscript

1. Is the manuscript title descriptive, effectively reflecting the work performed?
2. Is it succinct, with parsimonious wording?
3. Is it interesting and will get attention of the readers?

Abstract and key-words

4. Is the structure adequate? Does it clearly identify the study aim, a description of methods; main results and conclusions?
5. Is the aim statement succinct and related with the manuscript content?
6. Does the methods section adequately identify the type of study and its main methodological characteristics?
7. Does the methods section include a summary description of study participants (units of analysis, analyzed sample, setting, sample size, selection criteria, etc.)?
8. Is a summary description of data collection methods included in the methods section?
9. Does the results section in the abstract reflect an attempt to summarize the main results in the research paper?
10. Are adequate summary measures and indication of the precision of the point estimates and statistical significance (if applicable) presented in results section?
11. Are conclusions supported by results section?
12. The abstract should no longer than 250 to 300 words.
13. Are key-words adequately selected from the National Library of Medicine Mesh (medical subjects headings) terminology?

Introduction

14. Does the background presented allow the reader to establish the relevance of the study?
15. Does it provide a logical rationale for the hypothesis/aims of the study?
16. Are the aims or hypotheses of the study clearly stated, and structured as primary and secondary?
17. Description of participants, methods, statistical analysis or results should not be presented in the introduction section.

Participants and methods

Study participants

18. Is target population clearly defined?
19. Are sampling methods adequately described?
20. Are participants selection criteria – inclusion and exclusion criteria – clearly stated?
21. Are characteristics of participants or units of analysis described?

Study design

22. Is study design clearly described?
23. Is study design adequately classified?

Data collection methods

24. Are data collection methods clearly described? (in manuscripts concerning systematic reviews, the methods used in searching, selecting, extracting and synthesizing data should be clearly stated.
25. Are descriptions of unusual methods or instruments for data collection adequately referenced?

Appendix: Checklist for the assessment of manuscript quality *(Continuation)*

Variables description

26. Are variables studied and analyzed clearly described? (In accordance with the study type: independent and dependent variables; intervention and outcome variables; exposure, disease and potential confounding or interaction factors; diagnostic tests and gold standards; etc.)

Statistical analysis

27. Is there a statistical analysis subsection present in the methods section?
28. Is the statistical analysis appropriate given the study design?
29. Is the statistical analysis appropriate given the type of variables analyzed?
30. Is the implementation of adequate summary measures, measures of precision of the point estimates (confidence intervals or standard errors) and statistical significance tests (if applicable) proposed in the statistical analysis section?
31. Are power and/or sample size issues considered?
32. Is the software(s) used for the statistical analysis adequately cited and referenced?

Global assessment items

33. Is the participants and methods section clear and structured?

Results, tables and figures

34. Are results presented in a structured and logic sequence along the text? (Sub)Headings use is desirable.
35. Are results adequately summarized?
36. Are results in tables/figures repeated in the text of the manuscript? Results presented in the text should only emphasize or summarize important observations and should not unnecessarily overlap tables and figures content.
37. Are adequate summary measures, indication of the precision of the point estimates (confidence intervals or standard errors) and statistical significance (if applicable) presented in results section?
38. Are statistical measures and tests described in the methods section actually presented in the results section? Is there an agreement between results and statistical methods described in the methods section and those presented in the results section?
39. Are all tables and figures self explainable and in accordance with the journal guidelines?
40. Do all tables and figures have a clear legend, with an adequate description of its content?

Discussion

41. Are the main findings of the study synthesized?
42. Are only results presented in the results section discussed? Main conclusions should follow from results presented.
43. Are limitations of the study adequately discussed?
44. Was a critical comparison with the available literature in the field included (if available)? If no similar work exists, originality and relevance of the research work should be discussed and comparison with research of other related areas should be included.
45. Are justifications of conclusions well articulated?
46. Are conclusions clearly stated and in relation with the results obtained?

References

47. Are references adequately structured and presented according to ICMJE uniform requirements for manuscripts submitted to biomedical journals? (References should follow Vancouver style).
48. Are manuscript references of an adequate quality?

Global requirements

49. Does the manuscript have an adequate structure according to recommendations? (By adequate structure one should consider the presence of clearly identified parts of manuscript in an adequate and logic order.
    Namely, the manuscript should contain a title page, abstract, text, acknowledgements, references, tables and figures).
50. Is the manuscript easily read? (The manuscript should reflect a necessary effort for synthesis and should be attractive to the reader).
51. Is the terminology and phrasing in the manuscript precise and correct? (The manuscript should reflect a necessary effort for correctness and should be attractive to the reader).
52. Are the wording, vocabulary and scientific terminology used in the manuscript adequate?

    Relevance and Originality

53. Is the study relevant to the mission of the journal and its readers?
54. Is the study original? What does the study add to the literature available?
55. Given the participants selection methods, setting and data collection methods used, are study conclusions generalizable and/or to whom may the study conclusions generalize to?