TO ACCEPT OR REJECT?
A GUIDE TO PEER REVIEWING OF MEDICAL JOURNAL PAPERS

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ABSTRACT

Background
Scientists and clinicians are often called upon to review papers and may need guidance to optimize their performance as reviewers.

Purpose
To provide guidance and insight into the peer review process and elaborate on issues relevant to journals dealing with therapeutics.

Methods
Issues and recommendations appearing in the literature have been identified and summarized for potential reviewers and readers of the journal.

Conclusions
The quality of the literature can be improved through the participation of peer reviewers. Guidance has been provided and some resources listed to assist.

Key Words: *Peer review, research design, critique, manuscript, journal, publication*

Peer review, as defined by the International Committee of Medical Journal Editors, is the unbiased, independent and critical assessment of manuscripts submitted to journals by experts who are not part of the editorial staff.[1] Today, almost all medical journals use peer review to evaluate submitted manuscripts. The Journal of Population Therapeutics and Clinical Pharmacology is no exception, as stated in its submission guidelines.[2]

According to Huston[3] this process has been used by journals for more than 200 years. However, questions have arisen regarding the quality of reviewing in general, and deficiencies have been noted. In an examination of reviews in one general medicine journal, Jackson and colleagues[4] found that the process was generally successful, but far from perfect. As a result, Wicherts and associates have proposed reviewing the peer reviews to assure transparency.[5]

Originally, reviewers were experts in their field, often learned professors with high reputations. However, in today's world of electronic communication, the number of medical journals has been increasing exponentially. One estimate was that 50 million journal articles had been published as of 2010 (but nobody knows for certain).[6]

Nonetheless, along with this increase in publications, there has been a corresponding increase in peer reviews. Consequently, researchers and clinicians, and even students, are being asked to participate in the process, with positive results.[7] But, many people who are being called upon to review may be unfamiliar with the requirements and expectations of the process. Freda et al.[8] noted a

high degree of demand for training and other forms of instruction on the part of peer reviewers, but the demands were seldom met. Therefore, this paper has been created to serve as a guide for potential peer reviewers and provide some insights into the peer review process.

Why Peer Review?

The main reason for peer review is the expectation that it will improve the quality of the literature.[3] The reviewer assists the editor in identifying high and low quality manuscripts and advising on their acceptability. Generally, those of higher quality are recommended and those of lower quality rejected. The reviewer no only assesses quality, but also makes critical comments for changes in the manuscript that serve to improve it. Thus, both editor and author benefit, as does the literature.

What is the Role of the Reviewer?

The reviewer's primary role is to appraise the validity of the manuscript with respect to its internal validity, which relates to the research design and the conduct of the research itself. Some of the questions that need to be answered by the reviewer are:

- Is the research design appropriate for answering the research questions?
- Was the sample size adequate?
- Were appropriate tests applied?

Another role is to appraise the value of the manuscript with respect to its contribution to knowledge, sometimes known as the external value. Some questions that need to be answered are:

- Does it make a contribution?
- Does it advance knowledge?
- Is this work novel?
- Does it confirm/refute prior similar articles?
- Will it stimulate controversy/exchange of ideas?

Identifying misconduct is another role of reviewers. Misconduct can include such issues as plagiarism, data inaccuracy, bias, duplication, fraud. The final (and very important) role is to make recommendations to the editor on its suitability for publication in the journal. Issues include how well the content coincides with the interests of the journal and its readers, and whether the topic is of sufficient interest to warrant the space in the journal and the effort required to bring it to publication.

What Needs Reviewing?

In 1966, Avedis Donabedian declared that assessment of quality required that three different aspects be addressed, which are structure, process, and outcome.[9] Structures are the physical factors involved (i.e., the format, or sections of the article), the processes include items like style, and outcomes refer to the value of the article to readers. All three aspects should be evaluated when examining manuscript quality.

The structure of an article is dependent upon the content. Articles may report original research (e.g., a randomized trial), a case report, a review, commentary or editorial. Journals normally arrange research articles in a series of sections often identified by the acronym IMRAD (i.e., Introduction, Methods, Results and Discussion). Each section serves a specific function and has its own requirements. The purpose of the introduction is to do just that – introduce the topic. This section should provide a context for the article, justifying why it was done. The justification should include a brief review of what has been done on the topic and what has not been done. The reader should be told why the subject is important. Finally, the overall purpose as well as specific objectives (or research questions) should be stated. Thus, the Introduction is the "why" of the paper (i.e., why the research was done). The Methods section is the "how" of the paper (i.e., how the research was conducted, from recruitment of patients to analysis of data). The Results section should present outcomes for each objective, along with results of testing. Table 1 summarizes the major sections and provides comments.

TABLE 1 Major Sections of Journal Articles and their Functions

SECTION	FUNCTION	PROPERTIES
Title	Succinctly identify purpose	Short and informative
Abstract	Efficiently summarize content	Complete description of all major outcomes
Introduction	Justify research Indicate purpose/objectives	Literature review + reasoned argument Explicitly state purpose + list objectives
Methods	Describes how objectives were realized - subject recruitment - treatments administered - outcomes measured - tests applied	Complete: Provides sufficient detail to allow replication
Results	- description of groups tested - outcomes for each objective	Describe subjects overall, compare groups Must be complete; all objectives must be addressed
Discussion	- explain implications of findings - extrapolation of results to the population - examine limitations and assumptions - identify areas requiring further study	
Conclusions	- State the "bottom line" - Recommend future research	Must address all of the stated objectives Must not include issues that were not objectives (only to suggest as future research)
References	Use journal style	Complete and consistent throughout
Tables	Summarize large amounts of data	Tables must stand on their own without reference to the main text or to other tables All abbreviations and acronyms in a table must be defined in a footnote to that table.
Figures	Depict relationships between variables	Figures must stand on their own without reference to the main text or to other figures or tables All abbreviations and acronyms in a figure must be defined in a footnote to that figure. Should depict relationships, not simple facts like sample size
Acknowledgements	Identify funding source, assistance received Identify conflicts of interest	

How Should Reviews be Conducted?

A review should be fair, unbiased, and constructive.Yaffe[10] has noted that the focus should be on improving the work, rather than merely exposing the flaws. The reviewer should provide constructive feedback to assist authors. As well, it needs to be accurate, complete, transparent and timely.[11,12] Reporting guidelines have been prepared for different types of articles. Perhaps the most used has been the CONSORT statement for randomized controlled trials.[13] To assist both authors and reviewers, lists of such guidelines have been prepared by the EQUATOR (Enhancing the QUAlity and Transparency of health Research) Network.[14,15]

Preparing the Review

Many reviewers assess manuscripts in that same IMRAD sequence, as it is a systematic approach and groups comments in a logical fashion (i.e., like with like). Others list their comments starting with the most important issues or most serious problems. Some journals specify how they would like reviewers to prepare their reports, while others allow the reviewer freedom to select what works best for them. Table 2 lists some of the common errors that reviewers may encounter in manuscripts. They need to watch for them and report them in their review.

Finally, reviewers need to present their opinion of the manuscript. Often, they may be presented with a checklist where they indicate their choice of accept, accept with minor changes, re-review after major changes, or reject. It should be noted that these are merely recommendations; the editor retains the final decision and is not obligated to follow the advice or opinions of reviewers. Table 3 lists common reasons for rejection. However, if the paper does have merit, but needs to change, the reviewer needs to state explicitly what would need to change for it to become acceptable.

If the reviewer does not have the expertise or experience to assess specific aspects of the paper, then that should be stated in a communication to the editor. It is not necessary for every reviewer to assess every issue. Stating one's limitations allows the editor to find another person to examine those aspects not assessed.

TABLE 2 Common Errors in Manuscripts

ERROR	EXAMPLES/COMMENT
Failure to state research questions explicitly	Readers should not have to guess or assume what was being tested.
Material in wrong place (extremely common)	Often, authors are so eager to give the results that they insert them ahead of their proper location (i.e., the Results section).
Inconsistency in reporting	Sometimes, more information is presented in the Abstract than in the main text. The abstract should not contain more information, nor different information.
Missing information	Not all objectives have an associated method or result. Concentrating on positive/desired findings or results that support the hypotheses and ignoring the negative. Not reporting sample sizes or incompletely reporting results of statistical testing.
Conclusions made based on unplanned findings	Conclude only on objectives. Incidental findings may be interesting, but cannot be reported as true results.
Misusing statistics	Selecting a criterion P value, then concluding that a "trend" exists when that value is exceeded.
Multiple testing	Applying multiple statistical tests and reporting only those which are significant. Failing to note how many tests were done and admitting the possibility of false positives due to multiple testing.

TABLE 3 Some Common Reasons for Reviewers to Reject Manuscripts

REASON FOR REJECTION	EXAMPLES	COMMENT
Bias	Distortion of the truth; not presenting all of the facts	Reviewers should inform the editor of any findings and evidence to support their views. Avoid accusations.
Inaccuracy	Intentionally or unintentionally mis-stating the facts	Same as above.
Plagiarism*	Copying part or all of the work (even from self).	Reviewers should identify problems, provide evidence and inform the editor.
Grossly inadequate writing	Manuscripts with excessive typos, spelling mistakes and grammatical errors.	Errors that interfere with understanding are grounds for rejection. If the underlying research is adequate, then recommend assistance be sought. Authors not completely fluent in English should enlist the assistance of a qualified person who has adequate fluency and understanding.

*There are exceptions to the rule. Sometimes, articles may be co-published simultaneously by 2 or more journals. Some may be reproduced or translated, with permission; often that is done to reach different audiences. In all cases, such events must be reported.

What do Editors Want?

First, editors want commitment because publishing articles of high quality is paramount. Clinicians and researchers must understand that accepting this task is an essential part of the knowledge dissemination process and must therefore share the responsibility for reviewing. We all want someone to review our papers, so it is only fair to "do unto others as you would have them do unto you."

Second, editors want timeliness; therefore, time lines should be respected. Everybody has demands on their time; delaying a review impinges on the time of everyone else involved and is not fair to them. Third is fairness and objectivity when reviewing; acrimony must be avoided at all times. Fourth, as mentioned above, is acknowledgment of the reviewer's limitations (if germane to the review).

Fifth; editors want comments on the paper. These comments need to be as specific as possible with explanatory notes. The reviewer should a) identify the location of a problem, b) indicate why it is a problem, c) state how it needs to change to make it acceptable (if it can be). Finally, the editor wants a recommendation (i.e., a bottom line). In the event that a revision is recommended, the reviewer should also indicate a willingness to re-review the manuscript after changes have been made to determine its final acceptability.

CONCLUSIONS

Peer reviewing is an integral part of science. More people are being asked more often to review papers for an ever increasing number of medical journals. This paper has provided some guidance to assist in the process.

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