

# The Peer Review Process: Underwriting Manuscript Quality & Validity

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Evidence-based practice is the first step in underpinning and shaping how the profession delivers patient care. The Oxford Dictionary defines evidence as: ‘the available body of facts or information indicating whether a belief or proposition is true or valid’. The majority of evidence, though not all, is provided by research studies published in professional journals. Best evidence should be of high quality and is thus founded on the status of publishing journals and the process by which journals, editors, and the editorial team separate out the “good” from both the “mediocre” and the “bad”.

This is undertaken by the process of Peer reviewing or refereeing; it is the practice of critically examining an author’s submitted research manuscript by experts in the same field before a paper is accepted for publishing in a journal. When well done, it confers a stamp of approval to the substance, authenticity and value of articles and therefore is a crucial element, integral to scholarly research and the validation of published evidence.

Medical journals must, by necessity, have a process in place which reduces the likelihood of poor or sub-standard papers being published. Once published, papers of poor quality, bad methodology or non-valid results can have far-reaching implications for individuals, patients and society. A journal’s editorial team has a significant and ethical role in preventing the dissemination of inadequately reviewed material and should ensure that there is, in place, an initial filter for checking the validity and value of a paper before publication. The peer review process is the means by which this is achieved and by which a decision is made as to whether a work should be accepted or rejected.

Editorial teams must ensure the trustworthiness and dependability of their peer review process and so warrant that accepted and published articles are of quality. Moreover, the status of the publishing journal is predicated on publishing sound scholarly articles and there-

fore the peer review process is central to achieving and maintaining this status. Journals, with a built-in high-class critical peer review practice, initiate and support evidence-based practice.

The process of peer review is necessarily time-consuming due to the involved detailed, systematic and comprehensive approach.

The editor makes a preliminary check to decide if the subject matter and content of a manuscript is suitable for the journal, and submitted in the format dictated by the journal in its “guide to authors”. Based on this initial decision, he determines whether the manuscript should be sent for peer review or be immediately rejected.

If the manuscript is selected for peer review, the editor must source qualified experts in the same field. Most journals use at least two reviewers initially.

Reviewers assess the editor’s preliminary view as to whether the manuscript topic is acceptable to the journal’s requirements, check whether a research question has been clearly stated, and decide if suitable methodology has been used to address the expressed scientific issues. Most journals provide reviewers with a checklist to help in this procedure. The methodology, including the employed statistical methods together with the originality of the research findings, are evaluated, as well as the ethical aspects of the study.

An essential aspect of the reviewers’ function is to judge the author’s knowledge of the subject. The logicity of the stated hypothesis, the contemporaneity of references and whether they are primary sourced and relevant, are given consideration; whether the conclusions are understandable and justifiable are assessed.

On completing their evaluation, reviewers report back to the editor individually; they do not consult with each other before reporting their views. Based on

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these reports, the editor decides whether to accept a manuscript or to ask authors to make minor or major revisions before being accepted, or rejected. Rejection usually means that the journal will not accept another manuscript by the authors based on the original submission.

A rejected manuscript does not inevitably mean the work is inadequate with regards to scholarly quality but may fall short of the high standards of originality and innovativeness expected by an elite journal.

The peer review process has an education element, and customarily, journals send the views of all reviewers to the authors with useful advice on how their manuscript could be improved. Authors should heed any advice given by reviewers and in most cases integrate these into their manuscript. Despite an outright rejection, authors should follow the given advice, re-write the paper and submit the improved version to a different journal. It follows that the peer review process not only helps to nurture the quality and integrity of submitted paper but is also key to a researcher's training. It has an important educational component which should be appreciated by younger and inexperienced authors. By taking cognisance of reviewers' advice and deliberating on these, authors will soon recognise common flaws in research papers, and use this to improve future submissions.

Peer review encourages keeping in touch with current research and sharpens critical analysis skills, all of which lead to an enhancement in the likelihood of being a successful published author.

There are several different approaches to peer review used by different journals. Each journal will indicate, in its guide to authors, which practice it uses.

In the single-blind review, the reviewers' names are not made known to the author(s), but the authors' names and institute may be known to the reviewers. This is the traditional review process and used by the majority of journals.

In the double-blind review, neither the reviewers nor the author(s) are known to each other. In both single-blind and double-blind there are usually at least two reviewers, and neither reviewer is known to the other.

A third or more reviewer may be asked to assess the manuscript when there is a difference of opinion expressed by the original reviewers. Additionally, journals may ask specialists in methodology or statistics to comment on these.

In this electronic age, many journals now use anti-plagiarism software and check if illustrations are original and have not been acquired from other published sources or manipulated by sophisticated software.

Authors should be acquainted of the fact that the editor will, in most cases, abide by the final collective suggestion of the reviewers, whether this is for acceptance, the requirement of minor or major modifications or rejection, and appeals by authors are not usually accepted.

A third review process, the open review in which authors and reviewers are known to each other is used by a small number of journals.

Each process has its advantages, conceived disadvantages and criticism. The review process should allow all authors equivalence in manuscript acceptance. Papers should be accepted solely on the basis of their academic worth and not on the authors, reputation, status or country of origin.

The single-blind review, with reviewer anonymity, is said to prevent reviewers from being influenced by authors. However, as the authors are known to the reviewers, concerns have been raised that this may lead to unnecessarily harsh or unjustifiable criticism and even personality clashes, where a reviewer may take steps against the authors to prevent or delay acceptance of a manuscript. On the other hand, the double-blind review with author anonymity prevents such reviewer bias.

Recently, a novel alternative to the standard peer-review process, called open peer review, has been piloted to address, in part, the critics listed above. This model includes "crowd-sourced" peer review where articles are published either immediately or after superficial initial checks by the journal, leaving any definitive and authoritative assessment to the scientific community. The method is not without inherent problems, the principal being the difficulty in finding an appropriate number of experts who are capable of offering a professional assessment. An in-depth evaluation of open review is inappropriate within this article, but the overall consensus is that open peer review should be complementary to the existing peer review process rather than supplanting it.

Authors can derive significant benefit from practising their own critical appraisal or peer review before submitting manuscripts; it is necessarily a systematised process which can be learned and improved. By rou-

tinely involving oneself in a self-peer review process, an author will acquire self-assurance in manuscript writing and benefit from the process. Self-peer reviewing can become an important element in an author's personal development plan and advancement as a researcher. In engaging in the process, critical analysis skills are honed, the individual is up-to-date and well-informed of current research, and well able to spot common flaws in research papers. These attributes once acquired improve one's chances of being a successful published author. To achieve this end, authors should acquire a standard checklist, used by reviewers, and adopt a disciplined and systematically appraisal of their paper before journal submission.

Peer-reviewed articles provide an established and reliable form of exchange of scientific ideas and in general ensures quality requirements of scientific publications. Scientific knowledge is by its very nature incremental and accumulative, and the quality of the previously published material is particularly important. Unreliable studies should never be allowed to become the basis of ongoing research. The peer-reviewed process cannot always prevent this occurring or ensure that all published work is factually accurate or conclusive, but it does go a long way to meeting these requirements.

The Journal of Critical Care Medicine is an international journal dedicated to publishing high-quality

peer-reviewed articles about critical care medicine, emphasising publishing novel and high-quality research papers. The Journal aims to improve the international practice of medicine at clinician, research, and policy-making levels. It is proud of its rigorous peer review system and its team of internationally renowned reviewers who give of their valuable time to undertake this critical process. It acknowledges the educational elements inherent in the process and takes steps to encourage young and inexperienced colleagues in developing their writing skills. Above all, it is proud of its pivotal role in presenting robust evidence-based data endorsed by a stringent but fair peer review process.

## ■ CONFLICT OF INTEREST

None to declare.

## ■ REFERENCES

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