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REVIEW ARTICLE

How to publish a scientific manuscript in a high-impact journal

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Summary Scientific publishing is an essential aspect of medical progress. New advances in human knowledge are communicated to the outside world through publications. It is essential that this knowledge is accurate, valid, reproducible, and clinically useful. Many aspiring clinicians and scientists dream of publishing their work in high-impact journals. For these dreams to become reality, it is essential to follow the basic principles of scientific research and publishing. In this paper, I outline my own personal view on how to publish your paper in such high-impact journals. I discuss the strategy for high-impact research, the logistics of manuscript submission, the likely outcomes, and the reasons for failure or success. I provide an insider's view of what editors look for in a successful manuscript and I offer advice on how to achieve this success.

Introduction

Journals are the custodians of scientific endeavor and advancement. They aim to publish sound research with enduring conclusions that will stand careful scrutiny and validation. As such, they are always seeking to publish material that has an impact on the scientific and medical community. Key elements of this work are novelty and the potential for stimulating further discussion and research. As aspiring authors, your aim is to produce such a document. Therefore, to produce a high-quality scientific paper, high-quality research must be performed. In reality, this is not as simple as it sounds. Some essential requirements are needed to achieve success. Even the most experienced researchers sometimes overlook these essential requirements and the output often ends up in lower-tier journals. In the following section, I have outlined the essential requirements for a solid high-impact publication.

Do good research

What are the essential requirements for good research? For aspiring young clinician-scientists, it is essential to choose a good unit with a good mentor. Mentors are essential in

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guiding us through the maze of scientific folly, pitfalls, and dead ends. They inspire us to find the best within us, keep us focused, and ensure delivery of success. When setting out to research a particular topic, it is essential to *read the literature* and master what has already been completed previously; there is no reward in reinventing the wheel!

Formulate an important research question

What defines such a question? Generally speaking, and for clinician-scientists, the research question has to stem from a *clinically important topic* that has a significant disease burden in the society in question. It is therefore best to *avoid rare diseases*, which are better researched in bigger and more established units with plenty of research support that can be diverted to such rarities. Choose a *research active area* where there is likely to be new ideas and methods you can use, and crucially, have plentiful grant funding. Aim to *define mechanisms* and not merely do a descriptive confirmatory type of research. Choose a topic that others around you have expertise in and can help you if things get difficult.

Do not work alone because this is self-defeating and will likely produce poor quality research output

Think of *collaborating* with national/international groups. Multicenter studies have a far greater impact and validity and ensure publication of your output in higher-tier journals. The next section deals with the importance of a sound study design.

Sound study design

The most important aspect of any research study is its *design*. This must be as near perfect as possible from the outset. If the design is defective, it will be impossible to fix it at the time of writing the manuscript, no matter how perfect your writing skills are. All editors and reviewers look for the quality of the study design as the first parameter. If defective, the manuscript does not progress further. Many projects are wasted opportunities because *inappropriate controls* are used. As much as possible, try to use *healthy volunteers* as controls; do not be put off by what ethics committees "might" think. Match controls and patients for age and sex, whenever possible. As mentioned previously, purely observational studies rarely answer questions of mechanisms definitively. A double-blind randomized placebo-controlled parallel group trial design is the most robust. It is so important to *involve a statistician at the beginning, not at the end*, of your study! You must define a primary endpoint before you start. Do a proper power calculation, which requires an estimate of the size of effect you can expect and the standard deviation of the primary endpoint measured. If you cannot do this, then you probably need to do a pilot study to define variability and reproducibility of the endpoint. If the "*n*" value is impracticably large, consider another endpoint or, better still, a collaborative project with another group.

Writing your manuscript

Having performed all aforementioned stages, and produced some amazing results, you have the task of preparing your manuscript. The simple secret to successful writing, scientific or otherwise, is that you are telling a story; therefore, it must make sense! It must have a beginning, a middle, and an end with a "take home" message. Other scientists reading your paper want to know what you did, why you did it, what you discovered, and what you think it means. Good scientific writing demands clarity, brevity, and logic. Thus, each paragraph should be able to stand alone, and yet provide context to what precedes it and what follows it. Use simple language and observe the rules of good grammar, spelling, punctuation, and linguistic style. You must avoid any irrelevant information, no matter how strongly you like it. Your research may have involved years of hard work and numerous experiments, but the rest of the world does not need to know about these! Include only the work that is relevant to the main topic of the paper and the scientific questions it is addressing.

Most journals demand a rigid structure and ask authors to adhere to certain conventions. You must follow these instructions rigorously to avoid wasting time in endless corrections and communications with the journal editorial staff. Thus, it is important to make every effort to produce a near-perfect manuscript the first time around. The most common convention for scientific manuscripts follows the format: Introduction, Methods, Results, Discussion, Acknowledgements, References, Tables, and Figures.

Before you submit

Before you submit your manuscript, it is essential to appreciate that you have only one opportunity to attract the attention of the editor; if this is wasted by careless mistakes or omissions, your chance is lost. It is always very helpful to ask a nonspecialist colleague to review your manuscript and comment on readability, typographical errors, grammar, etc. More importantly, the colleague would be able to advise you about whether your manuscript is logical and if the story makes sense. Serious consideration has to be given to the title of the manuscript, the abstract, and the cover letter to the editor, as explained in the following paragraphs.

The importance of the title

The title is the first window for readers to look at your work. Therefore, select a title that catches their attention, accurately describes the contents of your manuscript, and makes people want to read further. A good title should be concise, convey the main topics of the research, and highlight the importance of the research findings (i.e., keywords). Your challenge is to come up with a title that is not too long (which could be clumsy and annoying) or too short (which could lack crucial selling points about your research). The best approach is to write down a few possible titles, think about how they describe the content

of the manuscript, and select a short list for further refinement. Ask your colleagues to help you.

The abstract

Abstracts represent a guide to the most important parts of your manuscript's written content. Many readers (and editors!) will only read the abstract of your manuscript. Therefore, it has to be able to stand alone. What questions should an abstract answer? In its simplest form, your abstract has to address these key questions: what was done? why did you do it? what did you find? why are these findings useful and important? and what is the "take home" message? If you follow this simple format, your abstract will be comprehensive and worthy. Make sure you follow the proper journal manuscript formatting guidelines when preparing your abstract and please note that most journals set a word limit of approximately 250 words for abstracts, which is the maximum that would appear on indexing services (e.g., PubMed).

Writing a cover letter to the editor-in-chief

In the cover letter to the editor, your aim is to "sell" your paper to the journal. You only have *ONE* shot at it, so you *MUST* get it right. Great care should be taken to attract the editor's attention and provide a reason for sending your paper out for external peer review. You should avoid careless mistakes (which sadly happen frequently!) such as addressing the letter to the wrong editor or even to the wrong journal! Tips on writing a good cover letter include:

- Address the editor-in-chief (EIC) by name. This implies that you know the journal's editorial committee and have bothered to check.
- Avoid making a mistake in the name of the editor or the journal! This happens when authors send their rejected paper to the next journal without changing anything!
- Ensure that your letter is not too short *or* too long and that it does not simply repeat the abstract.
- Highlight the novel aspect of your work and why the journal readership would find this important.
- Indicate why this work fits the journal's remit and scope.
- You may wish to let the EIC know whether your manuscript was rejected by another journal, and attach previous reviews and your response to them.
- Make sure your cover letter contains these sentences: "We confirm that this manuscript has not been published elsewhere and is not currently under consideration by another journal. All authors have approved the manuscript and agree with its submission to this journal."

Choosing a journal: Be honest about the quality of your own work

Choosing a suitable journal is one of the most important and difficult aspects of publishing scientific work. Judging the quality of your own work and where it fits in the hierarchy of scientific journals is not an easy matter and requires considerable skill. You should be familiar with your own field and should be up-to-date on what has and has not been published already. You should therefore be able to place your work on the novelty scale, the impact scale, and the priority scale. High-impact journals want to publish novel findings that have a major impact on the field. This is what defines high priority. They do not want to publish confirmatory studies that simply replicate the first or second published papers. You should also be honest about the quality and impact of your work. We all think very highly of our own research; however, the more important measure is how other researchers think of your work. To give an example, if your study was presented at an international meeting and was very well received by the audience and chairs, and it generated high-quality questions that were answered expertly, then your work is likely to be of interest to the high-impact journals within your specialty. If the work was selected for the plenary session of such an international meeting, then it is likely to be of interest to even higher-impact "weekly" medical or scientific journals. Such journals look for definitive work that will change management or unravel mechanisms of disease.

Most authors like to cascade down when it comes to publishing. They start with the highest impact journal, and then work their way down the hierarchy. This is acceptable if you have time and you do not mind spending months waiting for your work to be published. However, a better approach is to judge the quality of your work accurately and target the most suitable journal from the outset.

Therefore, you should check the aims, remit, interests, scope, etc. of the journal in question. It is also acceptable to make a presubmission inquiry to a high-impact journal, if you think your work is worthy. If they allow you to submit, then you are fishing in the right pond!

Logistics of manuscript submission and editorial handling

First and foremost, follow the instructions! Many avoidable delays are incurred because of the lack of adherence to journal submission instructions. Thus, you should adhere to simple things such as word count, formatting, tables and figures, and media. Do not submit to two journals simultaneously; this is regarded as a serious offense in publishing and in academia. If you encounter problems, you should contact the journal office.

Once your manuscript is received by the online system, it will be scrutinized carefully by the editorial assistant who will find all the discrepancies that you ignored at the beginning! This is where frustrating delays could occur, but these are avoidable if you follow the instructions. The manuscript is then assigned to the EIC. The EIC will assess your manuscript (i.e., cover letter, abstract, and the gist of the discussion) and, unless the work is very poor, will assign it to an associate editor who is a member of the editorial committee. The associate editor will assess the manuscript and the main decision at that stage will be to send it out for external peer review or to reject it without such a review. The reasons for an instant rejection are outlined below. However, if your manuscript is deemed worthy of external

peer review, then you have clearly attracted the attention of the editors and pitched the work to an appropriate journal, regardless of the final outcome.

Reasons for an instant rejection

The most common reason for instant rejection is that the manuscript is inappropriate for the journal (e.g., too basic for a clinical journal, too parochial, or outside the remit of the journal). Other reasons include the following:

- It lacks novelty.
- It is a descriptive work rather than a mechanistic work.
- It poses an uninteresting question that leads nowhere.
- It has a poor or inappropriate study design (e.g., it is underpowered).

External peer review

If the editors decide that your manuscript is worthwhile and stands a chance for publication, they will seek external peer review. The percentage of manuscripts selected for this pathway varies from journal to journal but certainly the higher-impact journals will only send out the best papers for external peer review. After the external peer review, the available decisions include rejection, major revisions, or minor revision and acceptance. Acceptance without any changes is extremely rare. Even the best written papers still have some minor flaws. Reasons for rejection after peer review include the following:

- Flaws in design/methods.
- Lack of novelty (as highlighted by expert reviewers who may be aware of similar papers that are in press or have just been published).
- Lack of a clear message.
- Small effect/incremental.
- Minor points that do not help.
- The study's rationale is poorly explained.
- The study has confusing charts.
- The figure or table legends are inadequate.
- The numbers do not match and the discrepancy is not explained.

You receive a major revise decision—what next?

If you receive a major revise decision, it means that your manuscript has a chance, but it has still not yet been accepted for publication. The editors expect you to address the comments fully and honestly. If you are unable to address some queries or to provide the requested additional work, you must state very clearly why this is the case. Remember that external peer reviewers are unpaid and, as such, they are generally doing the journal, the authors, and science a great service. They should be viewed as supporters, not adversaries! Their comments are often fair and designed to enhance the quality of the research and its presentation. As such, it is essential that you treat them with respect in your answers to queries. You should never insult, dismiss, ridicule, or belittle them. If you disagree with their point of view, state your opinion clearly but politely. Never question their degree of expertise or knowledge; this does not help and will likely upset the editors as well.

You should try to provide answers or data for all comments. If this requires extra work, then so be it. This will ultimately provide you with a far greater piece of work that you and your coworkers will be proud of. If you are unable to perform the additional experiments requested (e.g., because of lack of funds, materials, departure of personnel from your lab), then let the reviewers and editors know this, while acknowledging the value of their suggestions in the first place. When you revise your manuscript, you should make it easier for the reviewers and editors: always number the pages; copy reviewers' comments, and make your answers clear by using subheadings and numbers; highlight your changes in the text, and give page numbers.

What do you do if your manuscript is rejected?

The initial reaction of most authors whose papers are rejected is rage and the desire to immediately send a rebuttal to the editor. Authors often shout cries of "unfair" and "ignorant" and worse. This is a natural reaction, but do not allow your emotions to cloud your judgment. The best strategy is to approach this with a cool head, perhaps after a period of reflection, and wisdom. Be humble and accept criticism because no manuscript is ever perfect. Look at the comments carefully and fairly. If you think the reviewer(s) made a mistake on an important point, and you can prove this, then you could consider a rebuttal to the editor. Most editors would re-evaluate the manuscript in the light of any glaring mistakes made by the reviewers. If you are also able to address the weaknesses of your manuscript by providing important new data that were mentioned by the reviewers, then you may wish to write to the editor and say that you acknowledge the comments of the reviewers and the reject decision but now you are in a position to rectify the weaknesses highlighted by the reviewers. This extra work may tip the balance and allow the editor to reverse the decision. It has to be said however that rebuttals are rarely successful. Therefore, if the aforementioned exceptions are unavailable, then your best action is to revise and send the improved manuscript to a new journal. If you send it to a new journal, make sure that you have addressed the weaknesses from the first version. It is really poor practice to quickly turn the manuscript around and just send an identical version to the next journal. Remember that in a specialized field you may get the same reviewer(s); therefore, be sure to answer all their questions.

What do you do if the manuscript is accepted?

Before celebrating your achievements, you need to perform a few more tasks. If not completed already at the time of submission, you must complete the copyright assignment

and conflicts of interest disclosure forms. Your manuscript will undergo typesetting and copyediting. Galley proofs will be sent to you and you will be asked to answer queries from the production team within a narrow time frame (usually 48—72 hours). It is essential that you carefully examine this typeset version because many mistakes creep in at the production stage (e.g., mislabeled legends, incorrect order of figures/tables, inaccurate language that may be linguistically correct but scientifically inaccurate). This is also the stage for updating all references in your bibliography section. Once all of this is completed, your manuscript will be scheduled for "online first" publication and will be provided a digital object identifier (DOI) number. The DOI is a character string that is used to uniquely identify an object such as an electronic manuscript. This is proof of publication and can be used on your *curriculum vitae*, grant application, or in bibliography for other manuscripts.

Summary and conclusions

In summary, the process of publishing a manuscript in a high-impact journal starts with choosing an important question, designing a sound study with statistical power, performing the work with impeccable integrity and attention to detail, writing an excellent manuscript, submitting it to the right journal, responding to reviewer comments fully, and completing the standard post-acceptance checks. There is nothing more satisfying than seeing your paper published and visible to the outside world. Hard work pays off and delivers high-quality and enduring and useful progress in human knowledge.

Conflicts of interest

The author declares no conflicts of interest.