



Getting Published: A Primer on Manuscript Writing and the Editorial Process

Paul Graham Fisher, MD^{1,2,3,4}, Denise M. Goodman, MD, MS⁵, and Sarah S. Long, MD^{6,7}

Scientific discovery is always a balance of tedium and exhilaration, and defeat and success, in which tenacity is as important as inspiration. These feelings can be just as true when you are publishing your work. Publishing in the scientific medical literature requires diligence and perseverance and can be as prone to pitfalls as is the research itself. Preparing and publishing an original article, however, need not fill you with dread. “Rules” of the process are codified to some extent, are not difficult to follow, and can be learned quite easily with a little guidance. Furthermore, organizing your thoughts and considering your study’s results in the context of what is known and unknown can be liberating. Writing your manuscript can force you to contextualize the work in the greater arc of your professional development. Associate Editors from *The Journal of Pediatrics* presented the workshop, “Keys to successful manuscript writing, journal submission, peer review, and publication,” at the Pediatric Academic Societies’ meeting on May 1, 2016. We distill here a list of 12 key, take-home messages essential to manuscript writing, and as an introduction to peer review and the editorial process.

1. Establish early who are the authors and in what order. Although this might seem like something you would decide closer to the submission of your manuscript to a journal, authorship should be established at the outset of the project. Otherwise, disagreements often develop later when authors dispute the amount of their work or the importance of their role. The journal will not serve as an arbiter. Disagreements need to be resolved among the authors themselves or other arbiters whom the authors chose within their institutions or larger study group. The Committee on Publication Ethics (<http://publicationethics.org/>) provides useful information on resolution of authorship disputes, as well conflicts of interest, plagiarism, and other aspects of publication ethics.

The position of authors after the title is not capricious but should reflect the authentic contribution of each author. The first author usually performs most of the investigative work and writing. The last author usually is the senior contributor to the project. In addition, journals adhere to authorship requirements set by the International Committee of Medical Journal Editors (ICJME, www.icmje.org). All authors must fulfill all 4 of the following requirements: “(1) substantial contributions to the conception or design of the work; or the acquisition, analysis or interpretation of data for the work; and (2) drafting the work or revising it critically for important intellectual content; and (3) final approval of the version to be

published; and (4) agreement to be accountable for all aspects of the work.”¹ You also should review carefully the guidelines of the intended journal for any specific authorship requirements.

Group authorship is becoming increasingly common, particularly in large, multisite clinical trials and other collaborative studies. The ICJME specifies further, “When submitting a manuscript authored by a group, the corresponding author should specify the group name if one exists, and clearly identify the group members who can take credit and responsibility for the work as authors.”¹ The group name should be included in the byline. Some or none of the individual group members also can be cited in the byline. Other authors or significant nonauthor collaborators not listed in the byline will still be associated with the paper in MEDLINE if there is a note linked to the byline stating clearly that the individual names are elsewhere in the paper. For instance, if the byline attributes authorship to Lady Madonna and the ABBYRD Trials Group, investigators Rita Meter, Maxwell Edison, and Colonel Mustard will also be cited by MEDLINE if there is a footnote or endnote associated with the byline and providing their specific names. Beyond authorship, acknowledgements are given to individuals who made substantive contributions to the study or manuscript but do not meet criteria for authorship.

2. Pay close attention to reporting guidelines and clinical trial registration. Almost all types of studies, such as randomized controlled trials, observational studies, quality improvement work, and meta-analyses, have specific reporting guidelines, available through the Equator Network (www.equator-network.org; **Table I**). These checklists provide useful roadmaps for study design, ensure that critical methodologic issues are recognized early, and provide a template for reporting results fully. All clinical trials involving patients must be registered at ClinicalTrials.gov or another approved registry.² A clinical trial is defined by the World Health Organization as “any research study that prospectively assigns human participants or groups of humans

From the ¹Department of Neurology; ²Department of Pediatrics; ³Department of Neurosurgery; ⁴Department of Human Biology, Stanford University, Palo Alto, CA; ⁵Department of Pediatrics, Division of Critical Care, Northwestern University Feinberg School of Medicine, Chicago, IL; ⁶Department of Pediatrics, Drexel University College of Medicine; and ⁷Section of Infectious Diseases, St Christopher’s Hospital for Children, Philadelphia, PA

P.F., D.G., and S.L. serve as Associate Editors for *The Journal of Pediatrics*.

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Table I. Equator Network (www.equator-network.org) reporting guidelines for the most common clinical studies

Clinical study types	Guideline
Case reports	CARE
Diagnostic/prognostic studies	STARD
Observational studies	STROBE
Qualitative research	SRQR
Quality improvement studies	SQUIRE
Randomized trials	CONSORT
Systematic reviews/meta-analyses	PRISMA

to one or more health-related interventions to evaluate the effects on health outcomes. Clinical trials may also be referred to as interventional trials. Interventions include but are not restricted to drugs, cells and other biological products, surgical procedures, radiologic procedures, devices, behavioural treatments, process-of-care changes, preventive care, etc. This definition includes Phase I to Phase IV trials.²³ Registration is required for single-center as well as multisite studies. Late or no registration in and of itself may be grounds for a journal to reject a manuscript without peer review.

- 3. Read and follow directions in the intended journal's guidelines for authors.** Format your manuscript specifically according to the instructions to authors for the intended journal. If the journal wants the first section of the Abstract to be called "Objective," then clearly state an objective. If this journal ultimately declines to publish your work, and the next journal stipulates that the section is called "Background," write that. Cite references according to the journal's specifications for style (eg, 3 vs 6 authors, proper style for Web sites).

One of us once read a cover letter accompanying a manuscript thanking us for considering their work "for publication in [name of a competitor journal]." Clearly, the manuscript had had at least one rejection. Most journal editors do not mind being the second choice but do care whether authors are not attentive enough to details to change the format and cover letter accordingly. Such lapses make one wonder if the science was similarly performed carelessly. Be sure to disclose any conflicts of interest, financial or otherwise. The ICJME defines conflict of interest as "relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work."¹ Overdisclosure is well advised, and the journal can decide ultimately whether the relationship poses a conflict or requires resolution. Finally, make sure that the manuscript and cover letter include all submission requirements, which vary from journal to journal. Some journals have a checklist.

- 4. Know and speak to your audience.** This advice applies to both selecting the right journal and scripting your work. If your manuscript presents basic or animal science, be sure to select a journal focusing on laboratory science. For human studies in child health, aiming for a high-impact clinical journal in pediatrics or general medicine might

be desirable. For a clinical manuscript with a narrow focus, a subspecialty journal with a more restricted audience might be indicated. In the end, the topic and scope of the work must appeal and matter to the journal's readership. Your audience may be conversant with the methods you used but not the question you asked, or may be well aware of the scientific gap you are addressing but not familiar with the approach you used. Online tools such as the Journal/Author Name Estimator (<http://jane.biosemantics.org>) can help identify journals whose content matches your manuscript.

- 5. Tell your story well and concisely.** You are ready to write. What is your message? Reporting science is like telling a story. Be original (but not too avant-garde) and develop within the manuscript a story line, akin to a short story with a plot, clear point(s), and denouement. Decide on the core material. Your report is not an epic and should not consider every facet of the topic at hand. Writing the Results (while simultaneously creating tables and figures) and Methods sections first, and then the Introduction and Discussion sections will often improve the flow of your final manuscript. The Introduction should not be an exhaustive literature review. Instead, the Introduction should be a brief preface, encompassing just 3 concepts and culminating in a hypothesis: (1) Why is the question important? (2) What key facts and current knowledge gaps are known? and (3) How is this manuscript going to address one of those knowledge gaps? It is always best to state a hypothesis (if you legitimately have one) or at the very least to state your aim.
- 6. Explain precisely how your study was conducted.** Your Methods section should inform the reader sufficiently to be able to replicate your study. Lay out step-by-step how you addressed the question. Describe your techniques, starting with definitions of the study population including candidate patients and final study sample, then conduct of the study, interventions if appropriate, outcomes, and analysis. New techniques should be described, and previously published detailed methods can be referenced. The approval process for human or animal research must be reported. The details of informed consent must be provided, whether written or oral, or modified or waived.
- 7. Report your findings concisely and clearly.** This is where the concept of telling your story with a clear narrative is key. The Results section should parallel the Methods section, unfold logically, and be easy to comprehend. You should use tables and figures to emphasize the take-home points while sparing unnecessary or redundant text. Conversely, tables and figures with legends should be able to be interpreted alone. Expectations for figures are especially high because quality software is available for graphics. Faulty graphics factor into the decision process regarding manuscript disposition. Figures should never be manipulated to make differences appear larger. A CONSORT flow diagram detailing the study subjects is obligatory for clinical trials and preferred for observational cohort studies. Do not provide extraneous find-

ings. You should avoid judgmental wording (eg, “Group 1 was markedly more affected by the intervention than Group 2”) that might belong in the Discussion section, but not the Results section. Use words appropriately, too. The word “significant” means a finding that meets the statistical threshold and nothing else. “Correlation” refers to the comparison of 2 continuous variables; other relationships usually are “associations.”

8. **Put your findings into perspective.** The Discussion section should put your work into context. A typical outline includes: (1) brief recap of your major and novel findings; (2) context and implications by comparing and contrasting with relevant literature in the field (stay focused by using only essential literature critical to your question; do not over-reference with an exhaustive literature review); (3) alternative interpretations of your data; (4) strengths of your study, avoiding boastful language, such as “first,” “largest,” “best,” etc; (5) limitations of your study (no study is perfect; here is where you should anticipate the concerns of the reviewers and answer them up front); (6) conclusions; and (7) next steps (eg, further research is needed). You should never present new data to support your comments. All new findings belong in Results.
9. **Give your paper a good title.** A synthetic, informative, and crisp title captures the attention of readers and affects how your paper will be found in search engines such as [PubMed.gov](http://pubmed.gov) or [Google.com](http://google.com). The title should be specific, as short as possible, straightforward, and not sensational. The type of study (eg, clinical trial or case report) often is included. Journals vary on whether the title should be active and declarative, stating the conclusion, versus descriptive of the study design. Avoid passivity (“A look at. . .,” “Effects of. . .,” or “Studies concerning. . .”) and naming your institution in the title. If the journal asks you to provide several key words to identify your manuscript’s subject and message, remember that these words too will help readers find your work. You might want to consider exploring NIH Medical Subject Headings (<https://www.nlm.nih.gov/mesh/meshhome.html>) or Google Scholar (<https://scholar.google.com/>).
10. **Revise and proofread!** After you have completed writing your manuscript, revise it. And then revise it again! Multiple revisions of your manuscript are expected before submission. All authors should contribute to revisions and must take ownership of the veracity of data and language of the final manuscript. Clarify, simplify, shorten, and focus. Use simple sentence structures. Check for typographical errors, then check again, and do not rely only on the spell check function of your word-processing program. Double check that any numerical findings in the text match those presented in the tables and figures. Sloppy writing implies sloppy science. Asking a published senior colleague, even one unfamiliar with the work, to edit the manuscript before submission can be helpful. Proofreading your draft (especially the title) orally also can be useful.
11. **Suggest reviewers wisely.** Some journals will ask you to suggest some potential reviewers for your manuscript. Jump

at the opportunity to suggest experts whom you believe will best know the science in your field and can judge your work. There are a few rules here. You cannot name anyone at your own institution, sometimes even your own city, and it is best to name only one person from any given institution. Moreover, if you have been a recent collaborator (“recent” depends on the journal, but often means within the last 3 years, sometimes 5), you should not list those people either. Do not suggest senior leaders without content expertise, friends, or relatives. Due to scandals of fake peer reviewers, provide the proposed reviewer’s educational title (eg, PharmD, MD, RN, PhD), institutional affiliation, area of relevant expertise, and e-mail address (not one from a generic server, such as Gmail, Yahoo, Hotmail).^{4,5} Look at the authors of your references for potential reviewers (the editors certainly will). Your reviewer list is another way that editors discern whether you know the field.

12. **Read the decision letter carefully.** Your manuscript went out for review and your initial manuscript was not accepted. Almost no manuscript is accepted as originally submitted. Editorial rejection occurs within days of submission, sometimes with a briefly stated reason, usually mismatch with the journal’s readership, methodologic concerns, or journal priorities. Editorial rejection can rarely, if ever, be appealed. Other decisions can be nuanced. If you have been invited to submit a revised version, this indicates that the editor sees potential and wishes you to address questions and concerns. This invitation, however, is no guarantee that your manuscript will be published. Take each comment seriously. The reviewers can be your best friend and often will strengthen the report by suggesting alternative analyses or interpretations. Prepare your reply carefully. A reply should be gracious and polite. The cover letter should enumerate individually each comment and your response. It is best to do this by actually

Table II. Common reasons for rejection, with or without review

Subject matter is not appropriate for the journal's readership
Format does not fit the chosen journal's article types
Lack of novelty
• Manuscript does not satisfactorily address “Who cares?” or “So what?”
• Duplicate publication
• “Salami science,” inappropriate segmentation of research into multiple reports or the least publishable unit
• “Me too” (“been done a thousand times”) publication, clearly performed and reported previously
Methodologic flaw that compromises validity of the study
Obviously unsound science
Writing is unintelligible, sloppy, or disorganized
Fatal ethical issues
• Lack of informed consent
• Deficiency in institutional review board oversight
• Improper clinical trial registration
• Failure to disclose conflict of interest or a conflict that cannot be resolved in regard to the study
• Plagiarism or self-plagiarism (reuse of authors' previous wording in a new manuscript without acknowledgement)
• “Ghost writing,” substantial contributions to the manuscript without disclosure of the involved individual

numbering or bulleting each comment, quoting it directly and completely, following this with your answer. State where in the manuscript each edit/change/modification was made and quote that specific passage in the manuscript (eg, “In response to the reviewer comment we now list the cities contributing information to the study, on Page 3 Paragraph 2, ‘Contributing cities include San Francisco, Chicago, and Philadelphia’”). If your manuscript was rejected before or after review, you should reflect on potential reasons why (**Table II**). Always revise the manuscript according to reviewers’ suggestions if you decide to submit elsewhere. Not uncommonly, a reviewer will have seen the manuscript when it was submitted to a previous journal.

In the end, your study design and findings are what they are. Presenting them precisely and concisely while avoiding needless pitfalls increases the chance of reaching your goal to publish the work. Although we cannot guarantee that following these guidelines ensures completely smooth sailing in getting your work published, you will be well on your course. Good writing! Good luck! ■

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Reprint requests: Paul Graham Fisher, MD, Division of Child Neurology, Stanford University, 750 Welch Rd, Suite 317, Palo Alto, CA 94304-1517.
E-mail: pfisher@stanford.edu

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