

GUIDES TO UNDERTAKING RESEARCH

6.2 Manuscript Publication & Authorships

This is a brief guide to the issues and etiquette around developing and publishing manuscripts. Preparing a manuscript for publication is always arduous and involves a long period (usually underestimated) of manuscript development, which is followed by the journal submission process and peer review, none of which are trivial matters.

Authorship

Anyone who contributed to the form and content of a manuscript should be included as an author. The issue arises as to how much contribution justifies authorship. Most journals have a guide as to who should and who should not be included as author. An author should contribute to one or more of these necessary features of the manuscript:

- Manuscript conceptual development;
- Contribution of essential materials;
- Data generation or collection;
- Manuscript writing or figure composition;
- Critical and extensive discussion or editing.

Clearly there are grey areas where judgement is needed, such as purely technical assistance with equipment (often included but not always) or if a service is bought in (usually not included); contributing only patients to a study, or providing some minor material contribution is not really sufficient. On the other hand leaving out a significant contributor to the manuscript is a type of misconduct and potentially serious. It is a good idea to clarify to all authors at an early stage that they will be included as authors.

Note that signatures or some other sign of assent of all authors may be required for manuscript submission to a journal. This should be borne in mind if there are any co-authors that are hard to contact.

Author list order

There are various conventions for authorship order but in biomedical publications the writer of the manuscript and main driver of the project is almost always first author. A newer convention of biomedical publications is that the last author is the senior member of the team and has made crucial, project-enabling contributions. The corresponding author for purposes of manuscript submission is also a significant status and is often the senior author or first author, but must be a person willing to deal with the process of submission. First, senior and corresponding authorships may be multiple, e.g., more than one joint first author or senior author, which is an important convention when the study is a collaboration across groups.

Note that in other fields (e.g., bioinformatics, or chemistry) there can be quite different authorship conventions.

Manuscript structure

This sometimes varies a little between journals but almost always includes a front or title page, abstract (150 to 300 words), Introduction (which includes a review of the research area and literature), Materials and Methods and related sections (e.g., Methodology or Datasets used). Results (a structured description of data) and Discussion section (describing how the data aligns with current literature). The specific details of these must follow the guidelines for the intended journal.

The text should contain relevant references that support major statements and assertions in the text, and these should be included in a list after the Discussion; then in the manuscript format there are included the figures and tables, and their respective legends that detail the data. Note that some extra data and other information not included in the main text or figures for reasons of space and brevity (e.g., negative results or extra analyses) may be put into supplementary figure for most journals. All the format and length of the manuscript text and figures should conform exactly to the requirements of the intended journal, and it saves time and effort if this is kept to from an early stage. If this is not done, truncations and rethinking of parts of the manuscripts may need to be done in a hurry when submission nears.

Developing the manuscript

Usually one or two authors take main responsibility of the writing, and it is absolutely essential to get critical input at all stages of development. It should be agreed early how to distribute writing duties and how the manuscript will be distributed for critiques.

At the start it is usually best to circulate manuscript drafts as MS Word documents, Google Docs or similar that can be used to track changes, because structural changes and rearrangements to the text are often needed and these formats are good way to view them; later on other software can be used.

Version control

Good version control is crucial and will drive everyone mad if this is not done properly. For MS Word documents good convention is to adopt one version as the master draft, and to pass this to a co-author for editing and prompt return and while this is happening no edits by anyone else should be made. A version number is important in the header and filename to avoid confusion. If these points are not adhered to there is a risk of developing parallel incompatible copies.

Using Google Docs or Overleaf can avoid these issues because the latest version is the one always available online. Both also allow simultaneous editing.

When only minor checks are needed at the end, make sure the drafts are approved by all authors.

Writing

Do not be precious about your writing, and gracefully accept criticism and edits. Work out a narrative structure, an ordered way of introducing components of the data, giving a structure that pulls all your main ideas together and helps text flow and clarity. Other points, in summary:

- Write clearly and check with others that it is indeed clear and understandable.
- Minimise complex sentences, and aiming for only two lines (three at most) per sentence can be a good technique.
- Link paragraphs so the story flows from one paragraph to another.
- Use clear and informative figures and tables.
- Use diagrams where possible.
- Make the conclusions sound strong and important, but note important caveats.

Remember also that you know the subject better than most, so do not assume everyone understands your arcane terminology and arguments. Also there needs to be recognition that most people do not produce their best writing on first draft, and it needs critiques from others to improve it. Spend as much time as possible going over the drafts repeatedly. Remember the oft-quoted “Easy reading makes hard writing” [Thomas Hood, *The Atheneaeum*, 1837]; it is always true.

Manuscripts that read well and have a compelling argument will easily get past editors compared to those that are not. You want to be proud of your manuscript when it is print, but there are no short cuts in the time and effort to get it right.

Dealing with data

Like the writing drafts it is important that the data being used is kept up to date and accessible which may not be simple if it comes from multiple sources. The datasets should be regarded in a sense as part of the manuscript, and care taken accordingly. For primary data most journals now require that raw data are publicly accessible in some form, usually in an online repository.

Public access to the published manuscript

Many grant-giving bodies mandate early or immediate public access to manuscripts, either via

journal website or a public repository. Check the journal instructions for authors how this can be managed and how much this will cost. Bear in mind the copyright may have to be assigned to the publisher, although that is not very complicated.

Manuscript publication is a hard job and you never stop learning. Remember also that writing will always help you refine your understanding and expertise. For that alone it can be worth the pain, or at least some of the pain.

Author: Julian Quinn

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Royal North Shore Hospital, DIVISION of SURGERY and ANAESTHESIA

