

# **Preparing a scientific manuscript for publication**

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## **Outline**

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- motivation
- what is a scientific manuscript?
- strategies for organizing, writing
- tips for successful publications

## **Motivation**

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- **Why make the effort?**
  - if your science is worth doing, it is worth describing well
  - if your work is not written up and published, the scientific impact is nearly zero
  - pride in your accomplishment
  - professional advancement

## **What is a scientific manuscript?**

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- a well-written manuscript is a compelling story, which describes a rigorous study
- each manuscript addresses a particular question or objective
- the manuscript provides a complete description of how the work was done
- the results are presented clearly and concisely, with appropriate analyses
- the implications of the results are made clear in the discussion

## **Strategies for success**

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- be sure that you know the purpose of the study, and the study design!
- studies may be hypothesis-driven or observational
- each manuscript typically fulfills one of these roles:
  - answers a question
  - describes the development of a new tool or technique
  - remedies some identifiable deficiency

## **Strategies for success**

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- be sure of the validity of your study design at the outset!
  - is the methodology sound?
  - can you describe your methodology clearly? (preferably, in advance...)
  - is the study original?
  - do you have sufficiently large samples?
  - will you test your hypothesis?

## Strategies for success

- choose a target journal, running title, and author list as early as possible!
  - your paper should be written in the specific style of the most appropriate journal
  - you must narrow the scope of your study to something that can be described in 3000 to 4000 words
  - you should select the potential co-authors at the beginning, so that they can assist you (and to avoid future conflicts)

## Tips for writing

### Full-Length Articles and Brief Reports

Definition: Full-Length Articles are descriptions of original research that adds to the body of knowledge in arthritis and the rheumatic diseases. Brief Reports are short papers of investigations into disease mechanisms, reports of clinical experience, therapeutic trials, or research and/or clinical contributions to diagnosis, treatment, etiology, and epidemiology of rheumatic diseases.

On the second page of Full-Length Articles and Brief Reports, include an abstract of fewer than 250 words. The abstract should be divided into the following sections: Objective, Methods, Results, and Conclusion.

On the third page, begin the introduction (no heading is necessary). Follow this plan of organization: Materials and Methods (or Patients and Methods), Results, Discussion, References, Tables, and Figure Legends.

Full-Length Articles should not exceed 4,200 words from introduction through discussion (not including references, tables, and figure legends). The total number of tables and figures combined may not exceed 6, and the number of references may not exceed 50.

Brief Reports should not exceed 2,500 words from introduction through references. The total number of tables and figures combined may not exceed 3, and the number of references may not exceed 15.

- authors instructions from *Arthritis and Rheumatism*

## Tips for writing

**Abstract.** Include a structured abstract of no more than 300 words for reports of original data, reviews and, meta-analyses. (See instructions for preparing structured abstracts.) For other major manuscripts, include an unstructured abstract of no more than 200 words that summarizes the objective, main points, and conclusions of the article. Abstracts are not required for editorials, commentaries, and special features.

**Ethical Requirements.** For human or animal experimental investigations, appropriate institutional review board approval is required and should be so stated.<sup>1(9140)</sup> For those investigators who do not have formal ethics review committees, the principles outlined in the Declaration of Helsinki should be followed.<sup>7</sup> For investigations of human subjects, state in the Methods section the manner in which informed consent was obtained from the study participants.

**References.** Number references in the order they appear in the text; do not alphabetize. In text, tables, and legends, identify references with superscript arabic numerals. When listing references, follow AMA style<sup>1(9928-55)</sup> and abbreviate names of journals according to *Index Medicus*. Note: List all authors and/or editors up to 6; if more than 6, list the first 3 followed by et al.

**Authors are responsible for the accuracy and completeness of their references and for correct text citation.**

### Examples of Reference Style:

1. Gordon KB, Papp KA, Hamilton TK, et al, for the Efficacy Study Group. Efficacy of patients with moderate to severe plaque psoriasis: a randomized controlled trial. *JAMA*. 2003;290:3073-3080.

- author's instructions from *JAMA*

## Tips for writing

- obtain the detailed instructions to authors for your journal, and follow them **exactly**
- instructions will include details related to:
  - length of article, number of figures, tables
  - format for references, number of references
  - general format, sections, headings
  - technical details related to figures, fonts
  - details related to author responsibilities
  - details related to required ethics reviews

## Tips for writing

**Authorship Requirements.** Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. One or more authors should take responsibility for the integrity of the work as a whole, from inception to published article. Authorship credit should be based only on (1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; and (2) drafting the article or revising it critically for important intellectual content; and (3) final approval of the version to be published. Conditions 1, 2, and 3 must all be met.<sup>4</sup>

Authors are required to identify their contributions to the work described in the manuscript. With the cover letter include the authorship form with statements on (1) authorship responsibility, criteria, and contributions, (2) financial disclosure, and (3) either copyright transfer or federal employment. Each of these 3 statements must be read and signed by all authors.<sup>1(9998-93)</sup> (4) The corresponding author must sign the Acknowledgment statement, indicating the names and contributions of all persons who have contributed to the work reported in the manuscript (eg, data collection, analysis, writing or editing assistance) but who do not fulfill authorship criteria. Authors should obtain written permission from all individuals named in an Acknowledgment.<sup>1(9996-97)</sup> See authorship form on page 118 or online at <http://jama.ama-assn.org/cgi/content/full/292/1/112/DC1>.

- authorship requirements from *JAMA*

## Tips for writing



Article

### Writing academic papers: a guide for prospective authors

R. Newell

As a journal Editor, I examine many papers and work alongside authors to maximize the likelihood of publication. During the course of this activity, several issues concerning writing for publication have emerged. In this article, I will use these experiences to help novice writers to prepare their work for publication. I will also draw on my personal experience as an author of academic and popular papers and as a book author and editor. If you find the article useful, please do distribute it freely amongst colleagues. © 2001 Harcourt Publishers Ltd

*Intensive and Critical Care Nursing 17:110-116 (2001)*

- take advantage of previous authors' experience

## Tips for writing

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- start with a draft outline of each section
- include bullet points, summarizing each paragraph
- expand each point into a complete paragraph
- aim to have each paragraph follow logically from the previous
- include some indication of the *motivation* for your actions
- don't aim to go through too many iterations

## Summary

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- know what question you are asking
- decide on the target audience (journal)
- confirm all co-authors at an early stage
- obtain and follow specific journal instructions
- prepare a complete bullet-point outline first
- a manuscript should tell a concise *story*, with a clear message

## Appendix: Planning a paper

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- stages involved in manuscript preparation

### 1) Concept

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- generation of initial idea for investigation
  - overt planning with supervisor
  - serendipitous idea

### 2) Literature search

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- check for related previous work in Medline, Pubmed
  - be sure to search broadly enough to capture pertinent papers
  - search titles, abstract as well as MESH headings

### 3) Pilot experiment

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- perform preliminary experiments to determine viability of study
  - small sample size
  - often performed without dedicated apparatus
  - not intended to test hypothesis, simply proof of principle

## 4) Manuscript outline

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- decide on hypothesis, objective, scope of study
- also decide running title, author list, target journal
- include major headings and “bullet point” summaries of each paragraph

## 5) Experiments

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- build the required equipment (or create the required software) and perform the complete study
- collect enough data to test your hypothesis
  - be careful here; resist the temptation to collect a lot of additional data ‘for fun’

## 6) Analyze data

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- perform all post-processing, statistical analysis, plot graphs
  - be careful in choosing the correct statistical tests
  - most studies can be completed with a small range of statistical tests: t-test, paired t-test, ANOVA, repeated-measures ANOVA, linear regression

## 7) Prepare figures

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- complete all figures, including schematics, graphs and images
- do not depend on Word and Excel!
  - use Photoshop for images
  - use graphics program (Canvas) for line drawings and schematics
  - use graph plotting software (Prism, Sigmaplot) for graphs
- remember, it is very difficult to write a manuscript unless the figures are available

## 8) Manuscript text

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- expand the bullet-point draft “skeleton” to complete paragraphs
- avoid unnecessary material; be concise!
- be sure to follow detailed instructions provided by the target journal
- proofread carefully
  - try to have another student, colleague or friend review it

## 9) Co-author review

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- all co-authors must read, edit, and approve your manuscript
  - many journals require all co-authors to sign a copyright agreement

## 10) Submission

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- likely to be completely electronic
- journals may specify type of document (Word) and format for figures (tiff)
  - after submission, you can expect to wait 1-4 months before receiving reviews

## 11) Respond to reviews

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- if you are fortunate, your paper will be accepted with minor (or major) revisions requested
  - always respond to revision requests (i.e. don't give up)
  - don't be confrontational; try to make as many changes as possible
  - you may be required to shorten manuscript

## 12) Final publication

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- if your revisions are satisfactory, your manuscript will be turned over to a publisher for editing, typesetting
- you will receive “proofs” of the manuscript for review, after a few months
  - you must respond quickly (days) to a request to review proofs
  - be sure to check formulae, units, figure captions