

# How to write a scientific paper

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Many physicians consider a scientific paper an unfortunately necessary conclusion to a research project, and some believe that all that matters is the data and not the writing style. In contrast, some investigators focus all their attention to the number of publications irrespective of the importance or their findings. While science and not writing must be our primary goal, we should remember that our work has to be published if we want it to be read and analyzed by others. To see our efforts in press, we must follow a number of orderly steps including the conception of the paper a search of the literature, and the writing process itself. The conception of the paper probably the most important of these steps, not only refers to choosing its format but to the answer of the main question..... Do I have something to say?.

## Choosing the right format for the paper

Medical journals publish several types of articles, including original contributions, reviews, case reports, brief communications and letters. The format of our paper must be chosen according to our data and the newness or importance of our findings

Original contributions usually deal with articles in which the investigators have been engaged in a clinical or experimental study designed to answer a specific question. In many research projects, the authors begin an study on the basis of previous anecdotal observations in order to confirm those findings supported by statistical data in the introduction, authors must tell the readers why the study was started. Introductions must be short and should not include an encyclopedic review of the condition or intervention that is going to be studied. The methods section is the most important part of the paper and must be structured in such a way that permit interested readers to duplicate the experiment; therefore the design of the study and the statistical procedures that the authors have chosen for assessment of data must be described in detail. Next is the results section

describing all relevant data in an orderly and objective way. Do not speculate in the results section. Tables or graphs should be used to present: complex numerical data, but too many tables usually irritates readers. Finally, the discussion section must be used by the authors to persuade the readers that the study has answered a question, confirmed an hypothesis or resolved a problem. While in the discussion authors are allowed to theorize, they must be coherent with their results, honest, and must quote previous reports even if they provide counter-evidence to their conclusions.

Case reports have been widely criticized in recent years and most journals have restricted the number of case reports per issue. However, it must be noted that some outstanding contributions to medical knowledge have been made through a case report (Alzheimers disease and Schilder's disease were first described as case reports) and that case reports are still interesting to many readers. In addition, case reports are relatively easy to write and serve as useful training exercises to young investigators. Authors should remember, however that case reports merit publication only if they describe unique conditions, unexpected associations suggesting a cause-and-effect relationship, or new therapeutic or adverse effects of a drug. Case reports must be concise and should deal with relevant data. With few exceptions, the cliché "a case report and review of the literature" is not accepted. Moreover, nothing irritates more than the common sentences "There have been only 15 published cases of this rare disease. We report here the 16<sup>th</sup> case" or "This is the first case of this condition diagnosed in our community". Unless you are dealing with a condition restricted to some geographical areas, the last sentence usually insinuates "how clever I am".

Reviews are widely read papers, particularly by residents and young investigators. Well written reviews

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are helpful documents that provide the readers a state-of-the-art of a given condition or intervention. Authors of review articles must understand the responsibility that they have when they write such a paper and they should not bias the information according to their convenience. Reviews should be written by experts in the chosen topic to assure that the information is up to date as possible, accurate and authoritative. The format of review article is different from that of original contributions or case report and should begin with a historical background of the revised condition and end with recommendations for future research.

Letters are popular and most journals welcome them. Letters may be used to describe brief case reports or clinical data that do not justify a full article. Indeed, it is not uncommon for authors to receive the editor's suggestion that their papers are of interest but should be reduced to a letter for publication. Contrary to the popular belief this is not insulting since interesting letters are read and quoted as well as full articles. Sometimes it is even better to have a letter published in a major, large circulation journal, than a full article in a second-line journal. To quote a few examples, letters published in *The Lancet* or *The New England Journal of Medicine* are widely read, commented and referenced. Many journals have introduced new sections called Brief Communications, Short Reports or Clinical Notes that will replace the section of letters devoted to the description of small series of single case reports.

Letters may also be used to comment against or in favour a previous paper. When doing so, remember that you should be gentle, objective and unbiased, and that the authors of that paper will always have the chance of replying your letter. The fact that you believe an authority on a given subject do not qualify you to destroy the work of others without proof.

### **THE TITLE AND THE ABSTRACT**

The title and the abstract of a paper are so important that merit a separate description. In these times of overwhelming medical literature, physicians must choose what they are going to read, and the title usually serves as a seduction to read the paper (or at least, the abstract). Avoid complex and obscure titles that are hard to read and understand. Titles should be concise and descriptive but should not reveal the results of the study. (Drug A vs drug B for treatment of multiple sclerosis is preferred than Drug A is better than drug B for treatment of multiple sclerosis). Abstracts are the most frequent read part of the paper (and not uncommonly, the only read part of the paper), and the

only part that is included in electronic storages of information (MEDLINE, Current Contents, Nerville, etc). So, abstracts must be descriptive and summarize the methods, results and conclusions of the paper. Currently, most journals ask for structured abstracts with the exception of case reports.

### **AUTHORSHIP**

Pressure for publication is increasing in these times. Most institutions qualify their investigators according to their number of publications and funding is usually given to those who publish more papers. This has caused that some hospital services or working groups include all their members in every study coming from that service or group. It is not uncommon to read single case reports authored by six or even more investigators or to see that the number of authors is greater than the number of animals included in a experimental study. In addition, some chiefs still believe that his name must appear in all the scientific production of his service. Currently, most journals include in the information for authors the suggestion that authorship should be restricted to those who have participated enough in the study to take public responsibility for it. Credit for authorship requires substantial contribution to the conception and design of the study, and not merely participation in the collection of data or taking care for the patients.

### **CHOOSING THE RIGHT JOURNAL**

Once the manuscript has been written, the next step is to choose the right audience (and journal) for our work. While all of us believe that our work always merits publication as the leading article of the most prestigious medical journal, such overestimate usually cause delay in publication since we first send that work to a large-circulation journal having a high rejection rate. If our work is too specialized, it will probably get acceptance in a journal devoted to a specific topic. In contrast, if we believe that our work is of interest for both the general practitioner and the specialist we should send it to a more general journal. In addition, the format of the paper should be considered before sending it. Some journals do not publish case reports or small clinical notes; therefore, if we have a case report, we should not send it to a journal that publish extensive original contributions. Likewise, if we have 70-page detailed review of the diagnosis of a rare disorder, we should not send it to a journal that almost never publish such kind of papers.

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