

Manuscript Writing

Using problem statements to organise and write a manuscript on original research

Preparing clear, convincing scientific manuscripts is a challenge. In my experience, the biggest problem for most writers is not an inability to write well in English but rather a lack of clarity regarding what their article is supposed to be about. The subject matter might be clear to them, but coming up with a clear and coherent concept for the manuscript is often challenging. Writers need to consider more than just the declared study objective (if there is one) – they need to consider what background information is essential and what the conclusions and key messages should be. Fortunately, there is a simple and effective method for sorting this all out called “the problem statement” approach, first described in *Medical Writing* by Marina Hurley in 2012.¹

How to compose a problem statement

A problem statement is simply two to three sentences defining (a) the problem and (b) what the manuscript does to address it. The focus here is on the purpose of the manuscript rather than the study.

All aspects of a manuscript can be related back to the problem statement (Figure 1). The introduction is an elaboration of both parts of the problem statement; the methods describe how the problem was addressed; the results describe what new information was added (outcomes) as

a result of attempting to address the problem; and the discussion describes whether the objective or purpose was met, what the individual results were and what they meant, what important considerations there might be, and what the problem looks like with the new information learned.

When composing a problem statement, use the fewest words possible. For the first part, not all aspects of the problem need to be explained, just the main one: What specifically is insufficient or unacceptable?

The second part of the problem statement only needs to describe the bottom line of what this manuscript is attempting to do. Some useful starting words for this sentence include “This article describes...” and “This article shows...”.

Here is an example problem statement:

Current influenza vaccines are not fully effective and must be given annually due to antigenic drift by influenza viruses. A more broadly protective vaccine is needed. This article describes the results of a clinical trial examining the immunogenicity and safety of a candidate broadly protective vaccine that targets the conserved stalk region of the influenza haemagglutinin protein.

In this example, both parts of the problem statement are clear: The problem is that the current situation is insufficient (existing influenza

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vaccines are not good enough and an alternative is needed). The intention of this manuscript is to address this by describing the results of a study on an alternative approach (a possible broadly protective vaccine).

Where to go from the problem statement

Once the problem statement is defined, building the manuscript becomes much simpler. The problem statement can be easily converted to a basic outline or skeleton and from there to a detailed outline and first draft.^{2,3}

To create the introduction portion of the outline, simply elaborate the problem statement into the overall problem and why it is important, the current situation and what is missing (or insufficient), and, finally, what this study examined. For the methods and the results, refer to CONSORT or other relevant reporting guidelines for what items to include.⁴ Finally, for the discussion, be sure to explain whether the objective of the study was met, describe individual detailed results and their relationship to what has been published previously; include considerations, strengths and limitations (with rebuttals); conclusions; and recommendations for applying the conclusions and for further work.

References

1. Hurley M. What's your problem? A practical approach to scientific document design. *Med Writ*. 2012;21(3):201–4.
2. Leventhal PS, Gilliver SG. Getting the results of clinical research published. *Medical Writing: the Backbone of Clinical Development* (special edition of *International Clinical Trials*) 2017;37–43.
3. Leventhal PS. How to start writing a scientific manuscript. *Med Writ*. 2013;22(3):229–232.
4. Leventhal PS. Guidelines for manuscript writing: Here to help. *Med Writ*. 2012;21(2):164–7.

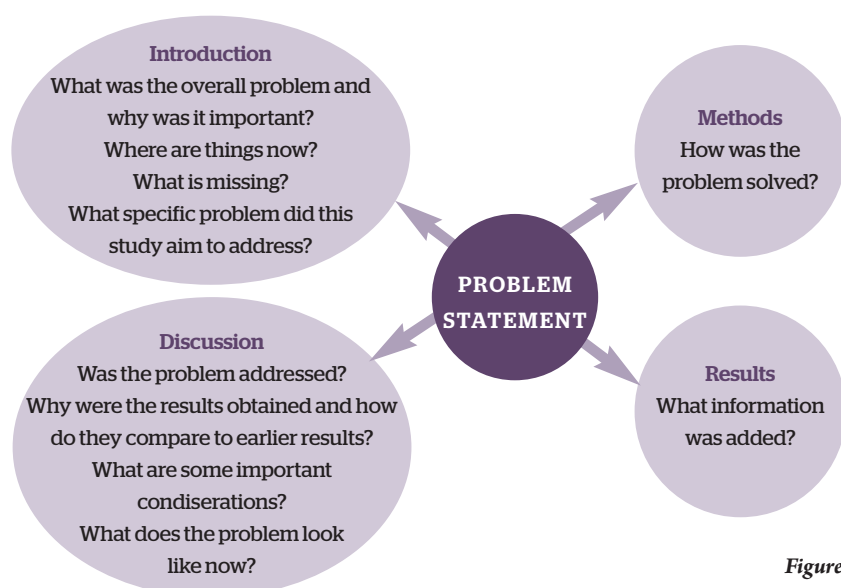


Figure 1