

Preparing Scientific Papers, Posters, and Slides

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Publications and presentations are important in academic medicine. The ability to present information in a standard fashion is critically important. Papers, posters, and slides must be prepared appropriately to maximize their chance of being accepted. The first step is to use word processing software correctly. English language usage must conform to standard scientific English usage. Abbreviations should be avoided as much as possible. Numerical data must be presented with the appropriate number of significant figures. The first step in preparing a paper is to decide the target journal. Papers should always be written in 12 point Times New Roman font, while slides and posters should be in Arial or Helvetica. The Results section must contain actual data with appropriate statistical analysis. Take great care to prepare figures and tables according to the journal's instructions. Posters must be prepared to allow easy reading at a distance of 2m. Use a white background and dark letters. The majority of the area of your poster should be Results, and there is no need to include the abstract or references on a poster. Slide presentations should be limited to about one slide for each minute of the talk. Avoid the use of animations and excessive use of color. Do not use abbreviations on slides. Following these simple guidelines will meet the requirements of most journals and allow your audience to appreciate the data on your posters and slides. (J Surg Ed 73:286-290. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

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COMPETENCIES: Interpersonal and Communication Skills, Practice-Based Learning and Improvement, Professionalism

INTRODUCTION

The “currency” of academic medicine is the published scientific work. It is through collecting these “coins” that academic careers are advanced. Although certainly other forms of currency are important (clinical care, education,

and administrative service), there is little doubt that publishing results is critically important in academic medicine. Once one has good data, the ability to publish depends on one's ability to cogently present information in an acceptable format. As a predominant percentage of the world's medical information is written in English, facility with the English language is an important prerequisite. For those whose native language is not English, this can present a formidable barrier, but one that can be overcome (in part) by the use of commercially available editing services.

It is critically important to prepare materials for presentation in a standard and acceptable format, yet there are few guides available for young investigators, especially those who live in non-English speaking countries, where the advice given is sometimes inconsistent with acceptable norms. The purpose of this brief article is to provide basic guidelines for preparing scientific papers, slides, and posters. It is by no means encyclopedic, and much of it represents opinion. There is a fair amount of variation in the suggestions made here. The concepts presented here represents a (not the only!) way of doing things, but the ideas presented here have been tested over time and should be acceptable in most forums. This article describes some of the basics of correct usage of word processing software and some important points of English language usage, followed by specific suggestions for preparing papers, posters, and slides.

WORD PROCESSING SOFTWARE

As editors of a large number of papers, we are continually surprised by the lack of facility most people have with word processing software. We present here some basic tips and suggestions, that if used, can ultimately improve your productivity with word processing software. Although it is not the only software available, some of the items here refer specifically to Microsoft Word, Excel, and PowerPoint (Microsoft Corp, Redmond, WA). Following these suggestions improves the appearance of your text and simplifies the work for an editor:

- Learn how to use the word processing software. Time invested in tutorials will pay rich dividends as you learn to use all the available features.

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- The “space bar” should be used only between 2 words and never to align text on the page. Text is aligned on the page by setting and using “Tabs.” The “Enter” key is only used to start a new paragraph. Indent all paragraphs with the Tab key.
- Start a new page with “Insert Page Break”. Do not hit the “Enter” key multiple times to get to a new page.
- Use a single font. Papers should be written in 12-point Times New Roman, with double-spacing. Slides and posters should be written in Arial or Helvetica.
- All papers should be written with “ragged right” margins. Do not justify both sides when you write a paper (Fig 1).
- Learn how to use the spell check feature. You can easily configure MS word to use both the spell checker of your native language and English.

LANGUAGE USAGE

The following points are specifically intended for those whose native language is not English. Most of these points are learned in elementary school English classes in English speaking countries:

- Avoid the use of extra words such as “moreover,” “furthermore,” etc. They add little to the information you are presenting.
- Do not start sentences with: and, but, so, or because.
- Semi-colons are rarely used appropriately so it is simpler to avoid them entirely.
- Numbers less than 10 should be written as words (“nine”) instead of digits (“9”).
- Always put a space after a period or comma.
- Generally speaking, abbreviations are bad and should be avoided as much as possible. They make your paper hard to read (both for the reviewer and the readership). Using them in a slide presentation only serves to confuse the audience, as they feverishly read your slide when you are talking. If you must use abbreviations they should only be standard abbreviations that most people in your field are familiar with (e.g., CT, MRI, and ATP). You should not invent your own abbreviations. All abbreviations must be defined on their first use and then used throughout the paper thereafter. Do not use an abbreviation for a term used just once or twice.
- Do not refer to patients as “cases.” This word is seen by many as demeaning and should be avoided entirely.
- In general, one should minimize the use of personal pronouns (e.g., “We studied...”) although this is not an absolute rule.

GENERAL SCIENTIFIC ISSUES

There are a few issues regarding the science of a presentation, which are applicable to papers, posters, and slides.

These are presented here, but apply to all 3 categories listed later, equally:

- When presenting numerical data, it is imperative to adhere to rules regarding significant figures. When multiplying or dividing (e.g., calculating the percentage of patients who ...) one can only report the result to the lowest number of significant figures in the calculation. The average hemoglobin in a study of 85 patients should be reported as 13, and not 13.267. A similar issue exists when reporting mean and standard deviation, where the standard deviation would be reported to 2 significant figures, and the associated mean as well. Reporting an excessive number of significant figures detracts from the results as it demonstrates a lack of understanding of basic mathematics and experiment design theory.
- The conclusions made at the end of an abstract, a paper, on a poster, or in a slide presentation must follow directly from the data presented. The conclusions can refer only to what was studied, and supported by appropriate data and analysis in the Results section.

SCIENTIFIC PAPERS

Once you have completed a project, you should select your target journal early in the process of preparing the paper. Look at some articles published in that journal, so that you can mimic the style and organization. It is very important to carefully review the “Instructions to Authors” for the intended journal and follow the directions thoroughly. Submit the files in the requested format, with the content specified. There is some variation in the format used for abstracts, especially. Most scientific articles are written in the IMRaD format (Introduction, Methods, Results, and Discussion). Be sure that the title page provides the information requested:

- The cover letter submitted with the paper should be short and simple, in 1 paragraph. It is used for legal purposes to formally submit the paper and declare that the paper is not submitted elsewhere. There is no need to summarize the paper in the cover letter. Some journals no longer require a cover letter.
- Your study should be referred to in the present tense, while previously published work is referred to in the past tense.
- Carefully follow the instructions to authors regarding word count, allowable number of figures, etc.
- Title: The title should be a declarative statement that reveals the results of the study.
- The abstract is of great importance and must contain actual data in the Results section, if the study type

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