

How to Make an Effective Poster

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Poster presentations given at scientific meetings are widely used in medicine, nursing, and allied health professions to communicate research findings. A good poster presentation can be an effective way to share the results of your research with your peers, in a collegial and non-threatening atmosphere. Feedback received during a poster session can be invaluable in refining your research and preparing for publication in a peer reviewed journal. A typical poster presentation follows the same format as a scientific paper. Poster sections include a title banner, the abstract, introduction, method, results, discussion, conclusions, and tables and figures. Technical details of poster production include decisions on what materials and methods to use to print and display your poster, font size, whether to use a professional graphics department for production, and cost. Presentation of your research at a professional meeting can be a rewarding experience, and is a useful step toward publishing your research in a respected science journal. *Key words: research, publications, exhibits, medical illustration, conferences and congresses, tables and charts.* [Respir Care 2004;49(10):1213–1216. © 2004 Daedalus Enterprises]

Introduction

Abstract and poster presentations are widely used at scientific meetings, conferences, and assemblies to com-

municate research findings in the biophysical sciences,¹ medicine,^{2–4} nursing,^{5–6} and allied health professions.^{7–8} Poster presentations can also effectively promote learning and foster critical thinking skills among health science students.^{9–12} Developing an effective poster presentation is a skill that is easy to learn and provides a rewarding way for you to present the results of your research in a collegial

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and supportive atmosphere that can be less intimidating than a formal lecture presentation, especially for a novice researcher. In this article I will describe the purpose of the poster presentation, the components of a good poster, and some technical details related to poster production.

Purpose of the Poster Presentation

The purpose of a poster presentation is to clearly and effectively communicate the results of your research to your peers in a format that stimulates interaction and discussion. Presenting at a scientific meeting or assembly such as the OPEN FORUM at the International Respiratory Congress of the American Association for Respiratory Care provides you the opportunity to meet people who have similar interests and to receive feedback and suggestions. That feedback can be helpful when it is time to write your research paper for journal submission, as well as for continuing, modifying, or expanding your research efforts. Colleagues' feedback at a poster presentation often leads to new and better ideas for additional research and to useful suggestions for improving your research and your presentation of it. In any event, developing your abstract and poster presentation is an important step toward winning acceptance and publication of your research in a respected peer-reviewed science journal such as RESPIRATORY CARE. In addition, your presentation may lead to recognition from peers and colleagues, which can advance your career. As another benefit, OPEN FORUM abstracts are published in RESPIRATORY CARE. However, the most important reason for your poster presentation is to advance the science and practice of respiratory care.

There are 3 basic types of poster presentations: original study; evaluation of a method, device, or protocol; and case report or case series. An original study typically leads to a traditional research report, using an accepted research methodology. Examples include descriptive research, observational studies, retrospective studies, and experiments. An evaluation of a method, device, or protocol generally describes a systematic evaluation of a newer technique or device. Examples include evaluations of new measurement devices (eg, oximeters, blood gas analyzers, monitoring equipment, spirometers) or new equipment for delivering respiratory care. An evaluation should include the results and interpretation of any tests performed and your experience with the device, method, or protocol. A case report presents an uncommon clinical case that has exceptional educational value. A case report can also report the effect of a new or improved method of management or treatment. Case reports should provide patient data and responses, as well as details of interventions.

Methods for presenting your research poster include the use of bullet points, tables, figures, photographs, and diagrams that help explain your research. Regardless of the

style you choose for your poster, the traditional components of a research report will be included: abstract, introduction (or background), methods, results, discussion, and conclusions. When properly done, the poster presentation will lead to a full journal paper submission. The materials and methods used to make a poster range from a "do it yourself" approach (which minimizes costs) to complete support provided by a university or hospital graphics department. Methods to produce a professional quality poster at a reasonable cost are described below.

Components of a Research Poster

Banner

A poster's *banner* (Fig. 1) shows the title, author(s), and institution. The display board for a poster is typically 4 feet tall by 6 feet wide. The banners should be 10–12 inches tall and 4 feet wide. The banner's print should be legible at 20 feet. The banner may be mounted on mat board or printed on roll paper. The banner should have 1-inch margins on all sides. Most authors include their institution's logo or seal on the left side of the banner.

Abstract

The abstract section of the poster must accurately summarize the hypothesis or research question, the methods, the data, and the conclusions described in the other sections of the poster. The abstract should be the same as the one submitted for consideration in applying to make the poster presentation. The font size should generally be 16–18 points for the abstract, introduction, methods, results, and conclusions sections of your poster. The text of your poster should be legible at a distance of 3 feet or more. I recommend using Times, Times New Roman, Arial, or Helvetica typeface.

Introduction

The introduction section of your poster should address the question, "Why did you start this research?" This section clearly defines the topic and explains what was studied and why—the rationale and importance of your study. The introduction should also include your research question(s) and/or the hypotheses you tested. The introduction section can consist of text and/or bullet points, depending on your personal preference and on which method makes the information clearest and easiest to read. I prefer to use text as the general format for a poster, as it makes it easier to convert the poster into a full-length paper for journal submission. Use the same typeface and font size for all sections of the poster, with the exception that the font size in tables and figures may be different (typically, smaller).

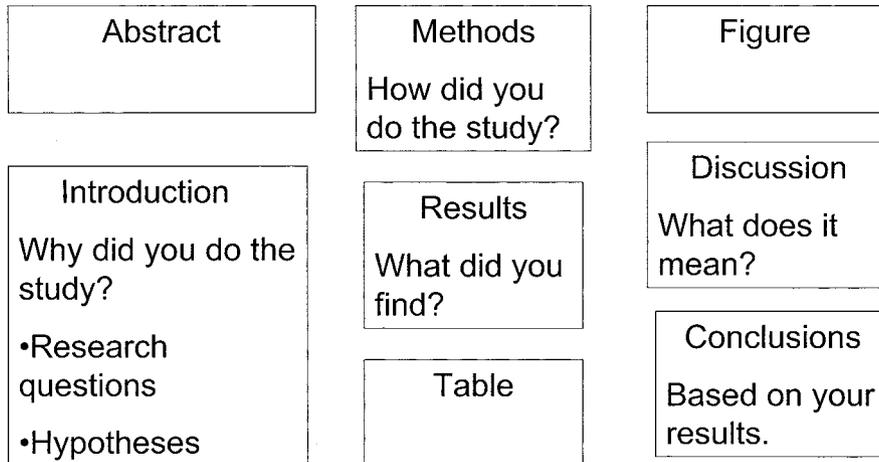
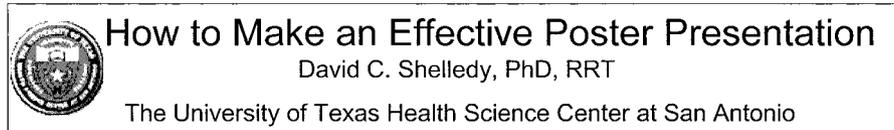


Fig. 1. The general layout of a poster presentation. The box at the top is the banner.

Methods

The methods section of your poster should explain what you did. Ideally, the methods section gives enough information to allow another researcher to replicate the study, though that may not be possible in a poster, because of space considerations. The paper you submit to a scientific journal must provide enough detail for study replication. On your poster the methods section should provide enough detail to allow another researcher to judge if the study design was adequate to answer your research questions and/or test your hypotheses, and thus to judge the validity of your study. Your data analysis and/or statistics used should also be described, including what p value you chose to indicate statistically significant differences. The methods section should also indicate:

- The population and subjects studied
- How subjects were selected
- How subjects were assigned to the study groups (randomly or by some other means)
- The interventions or exposures, procedures, and/or protocols you studied
- Whether the subjects and/or the researchers were blinded
- What devices you used (include the model name/number, manufacturer name, and what city and state the manufacturer is in)
- What outcomes were measured

Results

The results section presents what you found in your study. This section includes your statistical analysis and tables and/or figures showing your data. Tables and figures should be used to clarify and depict your study's results, and they should be clear, self explanatory, and uncomplicated. Figures must include legends.

Discussion

The discussion section tells what you think your results mean. This section may also present supporting evidence from published reports. Any contradictory findings should be addressed, and the limitations of your study should be described.

Conclusions

In a poster you may create a separate conclusions section, or use the last paragraph of the discussion section to state your conclusions, whereas in a paper submitted to a journal the conclusions (or summary) section is required. Your conclusions should directly relate to your study's research questions and hypotheses and should be supported by and consistent with your study results.

Tables and Figures

Tables and figures are used to clarify and display study results. Tables and figures should be used only if they

present your data more clearly and make your results easier to interpret than would text. Generally, tables and figures appear only in the results section, but in some cases there may be cause to use them in other sections. Tables are generally used to report data or list information. Figures are reserved for graphs, line drawings, photographs and radiographs. Figures may be in black-and-white or color, but when designing a figure it may be best to use black-and-white only, on the assumption that your poster presentation will lead to submitting a paper to a scientific journal. It is unlikely that a scientific journal will publish the figure in color, and at that point the figure would have to be reworked to account for the loss of color. You must obtain copyright permission for a borrowed figure, and you must have a letter of consent from any individual who is identifiable in a photograph you intend to use as a figure.

Technical Details

The typeface and font size should be such that your poster can be easily read from a distance of 3 feet or more. The banner should be legible from at least 20 feet. Figure 1 shows the general layout of a conference poster.

Options for printing your poster include doing the work yourself or using a graphics department at your institution or a commercial graphics company. We use our graphics department for banners, and we do the rest of the printing and poster mounting within our department. A full-color, laminated roll poster done by a graphics department can cost as much as \$600. A banner with the institutional seal generally costs about \$35. We then purchase glossy paper, mat board, and related supplies, and print our own text and figures using either a laser printer or good-quality color printer. This keeps the cost down to only a few dollars.

For printing we use a laser printer and print the text for each section on 8.5×11-inch glossy paper, in landscape orientation. We prefer Arial typeface and 24-point font. For all the poster's sections other than the banner we set the printer margins at 0.75 inches on all sides, for sections that will fit on a single sheet of paper. When 2 or more pages need to be aligned to result in a section length of > 8.5 inches, the margins of the pages to be fitted together are set at 0.2 inches on the bottom of the first sheet and 0.2 inches on the top of the second sheet, which allows the 2 sheets to be mounted on the mat board as one continuous sheet. Any excess paper at the bottom of a sheet is trimmed using a large paper cutter and leaving a 1-inch margin.

Another option is to set up your poster presentation as a series of Microsoft PowerPoint slides. The sections and sequence of your presentation are the same as described

above, but each slide is printed on an 8.5×11-inch sheet of high-quality paper. Each slide is then mounted on mat board or poster paper, with 1-inch borders on all sides. Banners can be printed with any of several word processing programs, and the separate sheets are taped together to form one continuous roll. Regardless of the method you choose, doing most of the work yourself can save considerably on production costs.

Summary

The poster presentation is an opportunity to clearly and effectively communicate the results of your research to peers and colleagues. Participation in a poster session will provide you an opportunity to meet with others and to receive feedback and suggestions on your research. Participation in poster sessions such as the OPEN FORUM can lead to recognition and career advancement. It will also be a useful step toward publishing your research in a respected science journal. Doing research and presenting your findings is an essential activity to advance the science and practice of respiratory care.

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