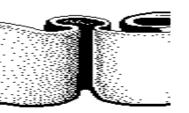
The 'Every Doc Can Do A Poster' Work book

Robert C. Marshall, MD, MPH, and the USAFP Research Judges



INTRODUCTION - An old saying goes something like this: "Prior Planning Prevents Poor Performance." Planning is essential to ensure a successful research project. A common reason an academic project fails is inadequate pre-project planning and organization. Since you are reading this, we assume that you either have decided to, or are trying to decide about, doing a poster.

The purpose of this workbook is to provide you with a practical approach to planning, organizing, creating and presenting your poster. Hopefully we can get you started thinking about the major steps that need to be accomplished in the planning phase. We encourage you to use this workbook as a starting point. As you make your way through this workbook, we have made recommendations at various spots on who you should contact for assistance. You will find the chapter by Catherine Coffin in Writing, Speaking & Communication Skills for Health Professionals an excellent resource as it was the major source of information used for this workbook.

We intend for you to write in this workbook. However, we realize that in some areas the space may be insufficient to fill in all of the details. If this happens to you, having a few extra sheets of paper to write on may decrease some of your frustration. You might also want to keep a separate notebook (or use PDA notes) in which you write anecdotes, remarks or comments by others involved in the project, or any other facts or observations which might help you to make sense out of the study.

It is also important that you finish reading this entire workbook before you begin creating your poster. Using this workbook as a guide will get you well on your way toward completing that academic project or research requirement via an outstanding poster.

OTHER RESOURCES - Some books that you might find helpful in becoming more knowledgeable about research & presenting include:

- Writing, Speaking & Communication Skills for Health Professionals, Health Care Communications Group, Yale University Press (www.yale.edu/yup)
- How to Write & Publish a Scientific Paper, Day, Oryx Press
- Publishing Your Medical Research Paper: What They Didn't Teach You in Medical School, Byrne

ACKNOWLEDGMENTS - Much of this workbook relies heavily on the efforts of Michael J. Gordon, PhD, from the Department of Family Medicine, University of Washington, Seattle, WA and William F. Miser, MD, from the Department of Family Medicine, Ohio State University, Columbus, OH. We would like to thank them for their inspiration and encouragement in modifying their original work. [Gordon MJ: Research Workbook: A guide for initial planning of clinical, social, and behavioral research projects. The Journal of Family Practice 7:1,145-160, 1978; reprinted by permission of Appleton & Lange, Inc.]

This workbook was modified by the 2002 USAFP Research Judges:

- Robert C. Marshall, MD, MPH, CAPT(s), MC, USN, editor
- Charles E. Henley, DO, MPH, COL, USA, Ret.

- Douglas C.Warren, MD, Col, MD, USAF,
- Keith L. Salzman, MD MPH, LTC, MC USA,
- John R. Holman, MD MPH, CDR, MC USN,
- Evelyn Lewis & Clark, CAPT, MC USN,
- Jackie C. Resnick, University of North Carolina
- Scott A. VanDeHoef, Maj., MD, USAF
- Karen K. O'Brien, MAJ, MC, USA and
- Mark B. Stephens, LCDR, MC USNR

If you have already chosen your topic and format (case report, etc), done your literature search and can justify presenting your topic, then you can skip to **Step #4** (this may be true if you have used one of the other workbooks). If not, or you want to backtrack to ensure you have covered all the steps, then start below with **Step #1.**

Step #1 - Choose Your Topic and Format

Posters can be used to present clinical investigations, case reports, performance improvement projects or curriculum/educational projects. Like any other scholarly work, you need to choose your topic carefully.

Begin By Asking "What Do I Have to Say"?: Be able to state it succinctly, clearly and meaningfully in a single sentence)						

Is the poster worth creating?

(Apply the "so-what" test. Is your topic new, true and important?)

- 1. Is it a case that is worth reporting? Follow the "so what" rules for **major** and **minor** case reports found in "Every Doc Can Do Case Reports."
- 2. Is it a clinical investigation that meets the criteria for scientific merit as either a completed trial or a pilot study?

- 3. Is it a completed performance improvement project with an appropriate follow-up, or is it only the initial data and the plan for the project (which is still appropriate)?
- 4. Is it a curriculum intervention or educational innovation with outcomes to report that are meaningful? Every intervention should incorporate an evaluation plan from the start. The proposed intervention may not be tested, however the evaluation plan should be presented with the initial concept and with the results at each stage of implementation.

Determine which category (case reports, etc) your work falls into – this should be fairly obvious. If it is not, ask for help (i.e., research mentor).

Category:	
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Determine the appropriate audience and setting.	•11
(Ask "who will care"? Determine the type of meeting at which you	
present – for FP's, that would be AAFP, State Assembly(which incli	udes the USAF
Scientific Assembly), STFM or other setting)	
Audience/Setting:	
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As you complete this workhook you may find it useful to	rossirita (rotir

As you complete this workbook, you may find it useful to rewrite (refine) your topic several times. Each revision should have greater precision and narrower scope in your search for a workable topic.

Step #2 - Hit the Library (Lit Search)

The next step is to learn as much as you can about what others have done (literature search and review). A good literature review lets you find out what is out there, helps you define your topic, and updates your knowledge about the subject in which you are interested (makes you an "expert" in that area). To get the most out of your search, you need an effective plan.

Begin your search by looking at the references cited in recent textbooks and the articles in your personal library. You should also browse the current issues of pertinent journals in your medical library, and ask other providers for a chance to look at their journals and textbooks. You should next use a computerized bibliographic database from the National Library of Medicine (NLM, MEDLARS) or one of numerous other resources, including evidence-based medicine sites like Cochrane reviews, Bandolier & TRIP database. All of these may be accessed from the USAFP web site, your medical librarian or your respective service's "telelibrary" or similar resource.

The NLM has several databases dealing with ethics, chemistry, toxicology, cancer, medical history, AIDS, and health planning and administration. Probably the most-often used database from the NLM is MEDLINE, which contains most of the medical journal articles from 1966 onward. Another useful NLM database is CATLINE, which contains lists of books, monographs, government documents, statistical sources, and historical material. Finally, don't forget to look at non-medical databases such as Science Citation Index and others dealing with subjects such as biology, psychology, sociology, and education.

A medical librarian has the expertise to help you with searching these databases and is a valuable resource you should not overlook. However, if you do not have immediate access to a librarian, you can do the search yourself using a personal computer and modem. You can now do your Medline searches for free by going straight to PubMed (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi); using this search mechanism requires a bit more expertise than Internet Grateful Med did, but it is very easy to use once you get used to it. PubMed has a link to Loansome Doc, a feature that allows users to order full-text copies of articles from a local medical library (local fees and delivery methods vary); users must register to use this service.

Although searching the NLM databases is extremely important, you will probably not find all of the important articles you will need. Studies have shown that only half of the relevant articles are typically retrieved at the beginning. As such, it is important for you to look for additional references in the bibliographies of the articles you initially find. Another useful search method is the *invisible college*, which is the collection of "experts" in the field you are studying ("experts" in the field will be mentioned often in the key literature you just searched). Your search for the invisible college begins

by asking the authors of the articles obtained in your initial search who they consider to be the experts in that field. You then ask those experts

Step #2 - The Literature Search (continued)

the same question, and repeat the process until you get to a handful of authorities, each of whom is aware of and refers to the others in that group as experts.

This invisible college is probably the best source of unpublished and ongoing research in your area. (McManus RJ, et al. Review of the usefulness of contacting other experts when conducting a literature search for systematic reviews. BMJ 317:1562-3, 1998)

Once you have the list of articles from your search, your next step is to obtain and then review those articles. Reading the abstract will let you know if the article is pertinent to your study, or irrelevant (and thus thrown out).

Once you have the articles you feel are pertinent to your study, you should then use a systematic way to read them.

As you critically read each article, ask the following....

- what was the purpose(s) of the study?,
- what did the author(s) find from their literature review?,
- are the hypothesis and question(s) relative to your topic?,
- is the methodology of the study sound?,
- what problems were encountered, and what were the limitations of the study?, and
- do the conclusions and recommendations follow logically from their results?

You may want to make notes on the article itself, or on a separate sheet of paper. When you are done reading these articles, you should have a good idea of what has been accomplished, how it was done, the problems that others have had in their studies, and how the results of your study can add to the existing field of knowledge. At this time you may also want to write a summary of your literature search, which would later serve as a basis for the introduction and discussion sections of your paper.

For additional information on how to conduct a literature search, we recommend the following articles:

- Wallingford KT et al: Bibliographic retrieval: a survey of individual users of MEDLINE. MD Computing 7(3):166-71, 1990.
- Magarey A, Veale B, Rogers W. A guide to undertaking a literature review. Aust Fam Physician 30(10):1013-5, Oct 2001.
- Felton DA. Conducting a search of the literature. Dent Clin North Am 46(1):45-9, Jan 2002.
- Williams HA: Searching the literature creatively: updating your skills in reviewing the literature. J Ped Oncology Nursing 10(1):33-6, 1993.
- Schira MG: Conducting the literature review. J Neuroscience Nursing 24(1):54-8, 1992.
- The Users' Guide to the Medical Literature superb JAMA series.....
 there are now at least 22 of these excellent articles ranging from how to get
 started reading literature to how to use articles about clinical decision rules.
 These are outstanding reference sources. Ask your librarian to get them.

Step #3 - Justify Your Topic

Based upon your literature search, evaluate your initial question and answer the following questions:

- Who cares about the topic?
- Is the topic appropriate based upon what is already written in the literature?
- What is the current opinion about your topic? Is there a consensus, or is opinion divided?
- Is the topic you are reviewing unique, or has it been "beaten to death" already in the literature? How does your topic add to what already exists? (Key question for any scholarly work.)

Vrite a para	graph to just	ify your pr	oject - cons	ider the ab	ove questions, b
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Based on the above, do you still feel that your project is justified? If yes, go on. If no, then either rework the question or find another topic.

Step #4 -Oral Presentation versus Poster

While oral presentations may be considered by some to be more prestigious, posters are significant components of many professional meetings. The skills required to present a poster include researcher, planner, author, graphic designer and presenter (some would say "showman"). The poster is better for presenting more complex results and ideas than a 10-minute oral presentation.

Posters are a visual, concise, appealing form of communication that allows one to share with his/her colleagues their scholarly work, clinical investigation, case report or curriculum/educational innovation. Creating a poster actually requires more expertise than generating a slide show presentation.

Comparison of Poster versus Oral Presentation (with visual aids):

Poster Presentation	Oral/Slide Presentation
Viewers can concentrate on part	Everyone looks at the same slides
that most interests them	or other visual aids
Viewers can determine time to	Speaker determines length of
spend studying material	audience's viewing time
Viewers may have diverse interests	More experienced scientists or
	researchers may not attend
Viewers can interact individually	Speaker has little interaction with
with presenter	audience except formal question
	and answer
Viewers are not comfortably seated	Audience is seated. They may or
	may not be comfortable.

From: Writing, Speaking & Communication Skills for Health Professionals

Desired Audience:

A poster may attract a more diverse audience than an oral presentation. While an oral presentation may provide more "visibility," the poster will garner you more and better feedback as well as improve opportunities for networking and developing collaborative projects.

Step #5 - Look at What Resources are Needed to Complete this Project

This is the appropriate time to see if you have the resources needed to successfully complete the research project.

Time. A key resource for busy clinicians or housestaff is the time required to complete a project. Is your topic narrow enough to allow for a succinct write up? Will you be reviewing 200 articles for a comprehensive review of hypertension? Take the opportunity now for an honest appraisal of your available time.

Available time:		

Audiovisual. Many medical centers have excellent medical illustration departments. In those cases, or if you have ready access to one, then audiovisual support will be easy. If not, then you will need to look into how you will get your poster made. Kinko's or similar companies can make posters, for a price. Check it out carefully before you go too far.

Reviewers. Though not completely necessary, identification of a person in your hospital or clinic who can give you an honest appraisal and feedback on your poster and abstract BEFORE submitting them can be very helpful.

Potential Reviewers:	

Step #6 - Write Your Abstract

Every poster requires that an abstract be written for submission. The poster is accepted or rejected based on that written abstract, so it is important to write a good one. Follow the IMRAD (Introduction, Methods, Results and Discussion/Conclusion) format for the abstract, or whatever the appropriate format for your venue (read the instructions carefully – see below).

Follow the guidelines in the abstract submission form provided by the meeting organizers, and look at examples of good abstracts. Get folks whose opinion you respect to review and provide feedback.

Step #7 - Planning the Poster

Review the instructions provided by the meeting organizers. For the USAFP, those are available on the USAFP web site under Research/Research Judges. If the instructions are unclear, incomplete, or you just have questions, now is the time to call and get clarification.

Think about how you are going to present your information in a visual way. An effective poster contains fewer words than pictures, graphs and charts. Consider visiting a children's museum to see how information has been designed to attract and appeal to a constantly moving and very impatient audience. Watch the kids interact with the most popular visual displays to obtain design ideas.

Get help early. Ask one of the professionals in the medical illustrations department, if that is available. They usually have good ideas and plenty of experience. If that is not available, ask around for anyone who may have presented a poster before. Failing that, get online to the USAFP web site (www.usafp.org) and look up a Research Mentor with poster experience.

Create a checklist and adhere to it. This helps you stay organized and, if you include a timeline, can help you finish on time (which should be at least 2-4 weeks before you present it). See Table 6.2 at the end of the text.

Practice your presentation. This is vital. Just as you would rehearse an oral presentation, you need to rehearse your poster presentation. Have others from your medical facility (or external to it) come review your poster and ask

questions just like the attendees and judges at the meeting will. This is invaluable and all too often forgotten. It helps you to anticipate questions.

Step #8 - Write Your Text

After you have completed your initial planning for your poster, it is now time to write the text for it. This is not a repeat of your abstract, although you do continue to follow the IMRAD format (or another format if appropriate and proscribed). One of the most common mistakes in posters is too many words.

A common saying for posters is that each picture is worth **four** thousand words. Why four thousand? It is a thousand you don't have to write; a thousand you don't have to proofread or spell-check; a thousand less on your poster; and a thousand less your audience has to read.

Introduction/Background: Provide a succinct overview of your findings. Justify the importance of your work and include any research hypothesis. Provide a clear objective or overview that states the purpose of your project. If a case report, tell why this particular case is important without pandering to your audience ("Every family physician should know about....."). Bulleted statements are best for this and other sections.

Methods/Intervention(Study Design/Case Report): Consider using a flow chart, diagram or bulleted statements instead of a verbose description of the project methods or case. Remember that your audience will only be spending a brief time reviewing your work. Draw them in by making this section brief but enticing and informative. There is no need to present complicated statistical analyses here. It can detract from your poster and disrupt flow.

Results/Outcomes/Evaluations: Contrary to written papers, the results section is usually the most important part of a poster. Again, be succinct. Highlight the major facts. You should be standing there so interested viewers can ask you about the details. Make the Results section colorful, visual and with as few words as possible. Photographs, charts, graphs, models or maps are useful methods for conveying the information. Each figure should be able to stand alone. There should be no references to these figures within the text of other sections. You do not want your viewer to have to move back and forth between sections. It is distracting and dissatisfying. For interested viewers-you can have additional materials neatly displayed that elaborate on the Poster-"hidden slides" if you will. For the truly inquisitive, it is

reasonable to have supporting documentation or articles available to share upon specific request.

For any text in the Results section, use short, simple statements so your audience can scan the information quickly. Use precise, descriptive language. A diagram or bulleted writing work well.

Discussion/Conclusion: A Discussion section may not be needed, depending on the type of project you are presenting. You might instead present an ordered or unordered bulleted list of Conclusion statements. Only use an ordered list if you feel there is an order of importance.

If you do decide to write a Discussion, consider these:

- 1. Briefly describe any relationships or generalizations shown by your data
- 2. Mention any exceptions, variations, lack of correlation or study limitations
- 3. Include how you feel your results support, agree, limit or disagree with findings from other similar studies or cases
- 4. Emphasize what is important about your results or case
- 5. Answer any research question you posed in the Introduction

Comparison of a scientific poster and a journal article:

Comparison of a scientific poster and a			
Poster	Journal article		
Text supports figures	Figures support text		
Mostly illustrations (of several	Mostly text; illustrations limited in		
types)	number, kind and color		
Emphasis on Results; brief	More emphasis on Discussion than		
Discussion which uses numbered	Results		
items or bulleted lists of			
Conclusions			
Little text; 50% white space	Lots of text		
Excellent for presenting results of a	Better for presenting a single result		
complex case. PI project or clinical	or point		
investigation	_		
Not a publication of record; does	A publication of record; needs		
not need detailed statistical	detailed statistical analyses and		
analyses; few or no references (can	references		
be included in the handout)			

From: Writing, Speaking & Communication Skills for Health Professionals

Step #9 - Begin Designing Your Poster

As you begin to prepare your layout, think about what your liked most and least about other posters you have seen. Think about the following complaints that are often heard:

- 1. The text is too small or too hard to read
- 2. Too much unnecessary data or text are included
- 3. The organization is confusing, without any informative headings
- 4. Glare from lamination or glossy poster paper makes reading difficult

While the poster's content is crucial, the layout can either enhance or detract from that content and its clarity. A successful layout attracts viewers. It maps out an easy visual path for readers and makes the message you are trying to convey as clear as possible. An attractive layout also stands out in a crowd and grabs the attention of passers-by.

Some useful design tips include:

- 1. Never forget the poster's purpose, audience and setting
- 2. Include your abstract on the poster only if the meeting instructions explicitly require it. Usually, it is published in the meeting proceedings for all to review.
- 3. Allow for about 50% white space (areas without text or illustrations) to allow eye rest and visual organization of the elements. Too little white space makes things run together. Use Velcro® instead of tacks, pushpins or staples to keep eyes off the edge of the poster and focused on your content.
- 4. Organize the sections the way people read (called "visual grammar") in a right to left and top to bottom fashion. Use a columnar setup with 3-4 sections for a poster 6-8 feet wide. Use Arabic numerals, arrows, or bullets to create an easy path for viewers to follow (visually guide them through the poster).
- 5. Size your text and illustrations so they are very readable from six feet away. Design your layout to be effective from this distance as well. One useful trick is to lay the poster on the floor and stand on a desk or table to view it.
- 6. Highlight the important sections by size, position and color. The most critical elements belong at eye level, which is usually the area just below the title. Often these are elements of the Results section. The Conclusion should also be placed at eye level.

- 7. Be creative with your illustrations, but ensure they support your central theme and message. All kinds of photographs, graphs, drawings, paintings, x-rays and even cartoons can be effective.
- 8. Experiment with alternative layouts to find the most effective one.
- 9. Study other posters you liked (or the judges liked) for additional organizational ideas.

Typefaces and Color:

- 1. Use sans serif, boldface type for the main title and subtitles. Examples are Arial, Avant Garde, Franklin Gothic or Helvetica.
- 2. Use serif (or sans serif) type for the remainder of the text (Bookman Old Style, Century Schoolbook, Times New Roman or Garamond)
- 3. Justify left margins, but leave right margins ragged
- 4. Use uppercase and lowercase letters throughout, and use them uniformly
- 5. Use muted, cool colors for backgrounds like blue, blue-gray, purple or green. Avoid loud, bright or hot (red, orange, yellow) colors since they may overwhelm your illustrations.
- 6. A suggested scale: 30-45mm tall bold, black letters for main title characters; 25-30mm tall for authors' names and institutional affiliations; 10mm for main text headings; and 5mm for supporting text. The key is to make it large enough for easy reading from several feet away. The Title should be readable from 6-10 feet away.

Step #10 - Supporting the Poster

When you are actually presenting your poster there are several things to remember about supporting it. While any poster should be able to stand on its own (i.e., be self-explanatory), several items (including you) can strengthen the presentation.

Presenter: This would generally be you. A presenter should certainly be present at any and all designated times. Be dressed appropriately for the setting. A professional appearance is optimal. Be prepared to discuss in depth your research, case, intervention, outcomes and conclusions. Be open to other perspectives on your topic, dissenting opinions and feedback on your project design or case. Both judges and meeting attendees can provide valuable advice. Remember, do not argue if you disagree with the feedback.

Handout: A brief 1-2 page (front or front and back of one piece of paper) handout giving a nice synopsis of your topic, that can be shared with interested viewers, is highly recommended and very useful. This can be an avenue to collaborative research and networking. Include your name and email address so people may contact you (see sign-up list).

Sign-up List: If you are interested, you can have a sign-up list for viewers who are interested in similar research to allow future networking and collaborative work. This list can include name, address, phone numbers and email addresses. With this information, you can create mailing groups, chat groups or list serves.

Business Card: Have your professional information ready to share, so that those with common interests can easily contact you.

Step #11 - Sit Back and Relax

Congratulations! If you have carefully followed this workbook, you have completed a poster that may very well be worthy of presentation.

Some last minute things to remember, as well as a useful checklist to keep you on task (as mentioned above in **Section #7**).

Poster presentation checklist.
Review your abstract to determine the main points you want to make with your poster.
Create a rough layout using graph paper, a bulletin board, or desktop publishing software. Identify areas for the title, text, and illustrations.
Write the text for all your poster sections. Develop appropriate headings for each section.
Outline any detailed material not appropriate for the poster, to be used in a handout for interested viewers.
Design the photographs, charts, tables, and other graphic elements for the Results section.
Experiment with different colors, shapes, and arrangements of the poster parts. Ask several colleagues for suggestions.
☐ Edit all the text. Carefully review all spelling and grammar.
☐ Recheck all data in the tables and figures. Revise any handouts to be

used.
☐ Duplicate (usually photocopy) handouts.
Review the meeting instructions a final time to ensure compliance with all guidelines.
Produce the final versions of all text and illustrations for your poster sections or single-unit photographic mural, and bring the materials to any production personnel assisting you. Allow time for revision-what it looks like on PowerPoint may not be the same as your 4'x6' or 4'x8' poster-don't accept a one shot production-time wise or production wise
If your poster contains separate pieces, photograph or sketch the final layout to use as a guide for quick setup at the meeting location. Decide how you will pack, carry, or send the poster components or mural. Remember Murphy's Law when traveling: never pack your poster in checked luggage. Consider mailing poster components ahead by a reliable courier.
Collect and pack office supplies (scissors, tape, rubber cement, Velcro®, pens, markers, stapler, etc.) for emergency touch-ups. Put these with your handouts and business cards.
Finally, visualize yourself talking with the audience and explaining your poster. Anticipate possible questions and practice the answers Rehearse with your colleagues before the meeting. Ensure they ask you the hard questions.
Be patient and try to enjoy the experience of the poster session. Do no be disappointed if not many attendees talk to you. At least a few will be interested, but they may not get to your poster until the end of the session. Always be courteous and patient with interested viewers.
Study other posters at the meeting for design techniques to use in the future

From: Writing, Speaking & Communication Skills for Health Professionals

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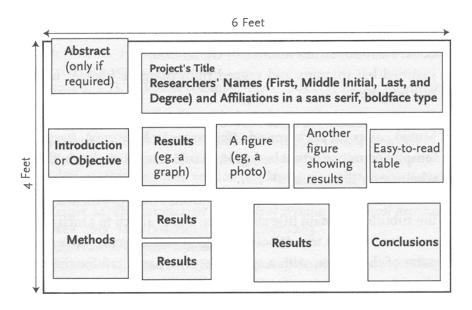
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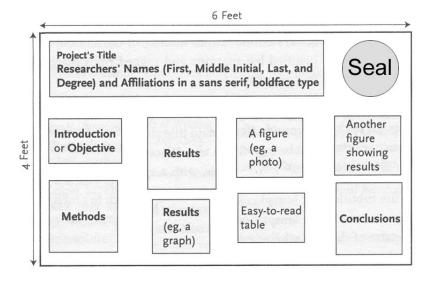
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Example of Poster Layout -1 (can be 4x6 or 4x8 – ask if not specified in the instructions):



Example of Poster Layout -2 (can be 4x6 or 4x8 – ask if not specified in the instructions):



Example of Poster – 1:

"Every Doc Can Do A Poster" Workbook



Example of Poster – 2:

