Developing a poster for disseminating research findings

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One of the goals of research should be the dissemination of research findings. Presentation of research findings to an audience of interest can be accomplished through formal or informal presentations at professional conferences or on a departmental level, publication in a variety of professional journals, and presentation as a poster session.

Poster presentations attract an audience of similar interest, permit interaction and clarification of the research process and findings by the researcher, allow creative expression in presentation, and help to build collegial relationships with others who hold similar interests. Posters are also a way for educators to present the research findings of others that answer specific clinical questions or provide a means of staff development.

A well-designed poster gives the viewer a concise overview of the research problem/purpose, research methodology, sample, results, and implications. Since the less formal poster presentation is viewed as less intimidating to some researchers and conference participants, posters may provide a more relaxed atmosphere in which the exchange of information takes place.

Key words: Anesthesia education, poster presentations, research poster.

Introduction

Poster sessions are an alternative to formal oral presentations while serving the same purpose, namely, disseminating research findings. The researcher is usually present during the poster presentation which provides an excellent opportunity for investigators to informally communicate research findings through direct interaction with the viewers and to transmit visual sensory messages by utilizing signs, symbols, objects, and relationships graphically.

There are situations where other routes of dissemination may be more appropriate, such as publications which reach a much larger audience, nationally and internationally. However, participation in poster sessions appears to have several advantages over formal oral presentations and publications. In a poster session, the findings are usually presented soon after the completion of the research in an informal setting which enhances communication between investigators and participants. Viewers have the opportunity to seek immediate clarification for aspects of the study which may be confusing, and networking can be fostered from the informal exchange of ideas.

The immediate feedback to the investigator can provide valuable constructive criticism which may be incorporated into future formal oral presentations or the preparation of manuscripts. The following suggestions are offered to familiarize investigators with poster presentations and the ease of informally disseminating research.
Primary purpose of the poster

The main purpose of the poster is to visually communicate research findings to a group of professionals who have similar interests. However, reports may be of ongoing or completed research, as well as ongoing research which is highly dependent upon the meeting, organization requirements, or criteria.

Secondary purpose of the poster

While researchers should learn the technique of formal presentations, poster presentations prevent the audience from being read to and provide the up-close exchange of ideas. Posters can also present important research findings of other researchers as a means of answering important clinical questions. For instance, a clinical educator or supervisor may present a research article published by another researcher that may explain a change in policy or procedure or update clinical personnel on current research in a particular area or problem. This method of poster presentation insures that personnel in a section or department have knowledge of where important information comes from and assists in staff development. A strategically placed poster in the clinical setting can be left in place for several days to insure that all personnel have the opportunity to view the information, including those who work part-time and non-traditional hours.

Submitting the idea for presentation

The professional organization that sponsors the poster session determines the guidelines for participation as well as the selection of participants. Typically, the organization sponsoring the conference, convention or meeting publishes a call for abstracts in professional journals. The abstract, which is a brief description (typically 100 to 200 words) of the completed research problem, methods, and findings is submitted for the sponsor's evaluation. The call for abstracts is targeted at the type of research which the organization or sponsor is interested in attracting.

The professional organization selects the participants by reviewing the submitted abstract which must follow the abstract guidelines or criteria of that organization. The organization then notifies the applicant of acceptance or rejection and generally provides poster session guidelines at that time.

Poster session guidelines

The guidelines or criteria for the poster session are essential information prior to preparation of the poster. Guidelines are usually very specific as to the amount of space available, such as a 6-foot booth area or a 4-foot wall space, as well as the type of display space provided (easels, tables, and walls). This will determine the size of the poster, type of poster (single panel or multiple-panel poster), and subsequently the amount of information that can be presented.

The location of the poster session and the set-up and dismantle times are also usually provided in the guidelines. Included in the guidelines will be the specific times during the conference, meeting or convention that the posters will be on display. Most sessions require that the investigators (researchers) be present during the display. It is recommended that the investigator be present during the specified times to answer questions, expand upon the limited information on the poster, and provide the one-to-one exchange of ideas. For these reasons it is imperative that guidelines be received as soon as the poster is accepted by the organization.

Developing the title for the poster

The title, which serves to attract participants to the poster, should include several informative elements. The type of study, major variables, and the population studied are suggested as the most informative and descriptive three factors for a title. The careful selection of descriptive words can communicate the type of study and even imply the measurements utilized. Titles including phrases, such as “characteristics of”, “effect of”, and “relationships among”, have been frequently used to convey messages for descriptive, experimental and correlational studies.

Informative and simple titles are generally suggested over witty phrases or long titles which are greater than 10 words. Titles should be printed in large enough type to be read easily at a distance of 5-10 feet and prominently displayed at the top of the poster.

Content of the poster

A poster includes elements of the abstract (research problem, methodology, findings, and title) which are logically arranged to enable the investigator to visually communicate the study. The presenter must remember that the visual appearance of the poster is an essential element in attracting an audience. Cluttered, visually unattractive posters that do not clearly communicate the intended message serve to divert participants away from the poster. The design, size, parameters, and sometimes the necessary content are determined by the guidelines for presenters. However, the
poster does provide the investigator with the opportunity to be creative in the production of the poster as long as guidelines are met.

It is important to communicate the major steps of the research process in the poster which are usually set forth in the guidelines. A summary of content which is frequently included in posters is as follows:

- Title.
- Abstract.
- Investigator(s).
- Purpose.
- Institution or institutional logo.
- Research question(s) or hypothesis (usually incorporated as variables or major elements in title).
- Sample (group(s) studied).
- Methods (description of how study was done).
- Design (usually incorporated into title).
- Results (findings and statistical analysis).
- Major conclusions (interpretation of findings or suggestion(s) for particular findings).
- Instrument (means of collecting data, questionnaires, surveys, and tabulation sheets).
- Implications (what the study and/or results may mean).
- Recommendations (what the investigator may recommend from the current study's results or recommend for future investigation).

Key elements are usually included which convey information to answer the questions why, who, what, when, where, how, and so what. Visually appealing content is preferred to narrative whenever possible. The utilization of tables, graphs, photographs, illustrations, and charts are recommended whenever applicable, which enhances showing versus telling the major components of the poster. All elements may be presented on colored background. Use of colored type, magic markers for underlining, highlighting, and making arrows to draw attention to important elements of the topic presented all add to the visual attractiveness of the posters. Some of the elements may be optional or are often integrated into different elements of content depending on the size of the poster, the researcher's requirements from his/her employer, the sponsoring organization's requirements, or the presenter's personal desires.

Materials for the poster

Materials used for preparing a poster are fairly standard material and are available in artists' supply stores, office supply companies, university book stores, craft stores, and in schools within universities that have learning resource centers or teaching resource centers.

The most common material for the actual poster is regular poster board. It is recommended that poster board be stiff enough to prevent curling. This may necessitate gluing two pieces of poster board together. Primary color combinations such as white on blue, green or red, or black on white have been recommended for posters. Avoid using pastel or light colors on a light background or dark colors on a dark background. Regular typing paper is even attractive when it is framed. A variety of construction materials which enhance and lend a professional touch to a poster are available at reasonable costs (Table I).

<p>| Table I |</p>
<table>
<thead>
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<th>Construction materials for production of posters</th>
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<tr>
<td>Regular poster board</td>
</tr>
<tr>
<td>Velcro, to attach components to board</td>
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<tr>
<td>Rubber cement, which will not ruin paper</td>
</tr>
<tr>
<td>Display boards</td>
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<tr>
<td>Poster board or cardboard on which to attach individual sections</td>
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<tr>
<td>Permanent display board</td>
</tr>
<tr>
<td>Burlap to cover easel or boards for background</td>
</tr>
<tr>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Clothing bag for one-section poster transport</td>
</tr>
<tr>
<td>Briefcase for separate sections and extra abstracts</td>
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<tr>
<td>Sturdy valise for permanent display boards</td>
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A convenient method of preparing a poster is to construct separate sections that can be easily transported and quickly adhered to the display board when the poster is actually set up. Velcro strips, which make the poster board reusable, are commonly used for this purpose. Separate poster sections also enable the flexibility of experimenting with a variety of arrangements to enhance the optimal visual message.

Arrangement

The usual space allotment provided by the sponsoring organization at the poster session display area is a 2 x 5-foot table, which can accommodate a four-section poster. A poster can be constructed from one to four sections of poster board which is dependent upon the amount of content the investigator deems necessary to display and is congruent with the organization guidelines. (Figures 1-5). It has been suggested that titles and subtitles be large enough to read from approximately three feet away while some prefer visibility from...
across the room. Therefore, titles need to be clearly stated in large letters and prominently displayed above the poster. Guidelines for the poster session are also valuable in guiding the author in the size of title preparation as the available space and location are usually clearly spelled out.

The main purpose of the poster is to visually communicate research in a simple manner; therefore, it is best to avoid overwhelming viewers with confusion and clutter. Easy readability may be accomplished by enlarging print, limiting the use of italics and boldface types, using Roman or block lettering, and selecting colors that attract viewers to the poster. This requires the researchers to succinctly codify the entire research project.

Selection of the elements of a research project to be included in a poster should be readily comprehensible in 5-10 minutes. This will assist in attracting more audience participation. Limiting each summary to one 8½ x 11-inch page should provide sufficient information to attract individuals who seek further information.

It is advisable to do a preliminary mockup diagram of the poster. This initial diagram will help the presenter obtain the best use of space for a visually appealing poster. It also sets limitations on available space for each element to be presented. After the researcher has produced the mock-up, he or she can begin to determine those ele-
ments to be presented and how they will fit into each allotted space. This process frequently requires more time than anticipated as an extensive research study is now condensed into a few pages to present an accurate but brief overview.

Appearance

Because viewers are generally drawn to a poster by its appearance and frequently associate the quality of research with the quality of the poster, it is important that the poster leave viewers with a favorable impression. Many researchers prefer to have their posters professionally prepared by a graphic artist; however, this can be costly. In 1990, an average of $50 per panel was reported for a professionally prepared poster compared to an average of $4.85 per panel when the researchers prepared the poster.

In poster presentations, pictures are sometimes better than words. Place the most important element at eye level in the middle of the poster. Avoid crowding the poster board with information, and do not position posters above a comfortable viewing or reading height. A plain, simple, and to-the-point presentation is the best approach and will attract the greatest audience.

Poster sessions

The majority of sessions require that the researcher be present during the presentation which entails a dimension of visual communication. Professional attire, comfortable shoes, and a friendly warm manner are recommended. A few extra supplies, such as extra copies of the abstract, copies of instruments, and business cards, have been found to be helpful to viewers.

Summary

Poster sessions can be an exciting way to disseminate studies and enhance interactions with colleagues which may facilitate networking and generate new ideas. Poster sessions also provide the opportunity for viewers to return to a given poster during poster viewing times for further clarification or to reevaluate specific aspects of the research presented. The availability of abstracts for distribution at poster sessions may encourage the return of viewers for clarification purposes.

Poster sessions are a highly valid means of disseminating research information. The experience of condensing research and organizing content for a poster which best portrays a study can be excellent preparation for oral presentations and manuscript submission.

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AUTHORS

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Call for poster session abstracts

The AANA Education and Research Foundation is sponsoring a Poster Session at the 1993 AANA Annual Meeting in San Francisco, August 14-19. The deadline for receipt of abstracts is June 1. For more information, contact Lorraine Jordan, CRNA, MS, Director of Education and Research, 222 S. Prospect Ave., Park Ridge, IL 60068.

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Only one nondepolarizer provides complete, spontaneous recovery* in less than 20 minutes.

Now for longer cases...

* from discontinuation of infusion
Complete spontaneous recovery in less than 20 minutes*

"Steady-state levels of block may be produced rapidly with minimal adjustment of the infusion rate and a consistent rate of recovery occurs...."

Ali et al, p.544.²

Recovery time less than half that of vecuronium

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<tr>
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<th>MIVACRON</th>
<th>vecuronium</th>
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<tr>
<td>n=25</td>
<td>13.6 (±0.6)</td>
<td>32.0 (±1.2)</td>
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<td>P &lt; 0.001</td>
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Spontaneous recovery time (from discontinuation of infusion) 5-95%.
Duration of continuous infusion for MIVACRON: 86.2 ±5.6 minutes; for vecuronium: 96.8 ± 6.6 minutes.

Adapted from Ali et al, p. 544.²

*from discontinuation of infusion

Important note: Patients homozygous for the atypical plasma cholinesterase gene (1 in 2500) are extremely sensitive to Mivacron. Mivacron should be used with great caution, if at all, in these patients.

Noncumulative—minimal rate adjustments needed

Continuous infusion for up to 2.5 hours is not associated with tachyphylaxis or cumulative neuromuscular block in ASA Physical Status I-II patients (data for infusions > 2.5 hours are limited).

Adapted from Savarese et al, p. 727.¹
Minimal CV effects

During clinical trials with bolus dosing, the only adverse event with an incidence >1% was transient flushing (15%). No patient who received a 0.15 mg/kg bolus dose was treated for a decrease in blood pressure. Higher bolus doses (≥ 0.20 mg/kg, adults; ≥ 0.25 mg/kg, children) may be associated with transient decreases in MAP and increases in HR in some patients. During infusion, no significant CV effects were reported.

Individualization of infusion dosages

- Renal or hepatic disease
- Patients heterozygous for the atypical plasma cholinesterase gene

50 & 100 mL premixed bags
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50 mL 100 mL 20 mL 50 mL

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(mivacurium chloride)
Short duration, fast recovery

Please see brief summary of prescribing information following this ad.
MIVACRON® INJECTION
MIVACRON® PREMIXED INFUSION
(MIVACURIUM CHLORIDE)

Brief Summary
This drug should be administered only by adequately trained individuals familiar with its actions, characteristics, contraindications, precautions, and effects. It should not be used in patients with a known allergy to benzyl alcohol.

INDICATIONS AND USAGE: MIVACRON is a short-acting neuromuscular blocking agent indicated for: (1) immediate surgical anesthesia and to decrease the requirement for intubation; (2) maintenance of surgical anesthesia; (3) accidental or deliberate overdosage with nondepolarizing neuromuscular blocking agents; and (4) to decrease the clinically effective duration of action and decrease the intubation requirement for patients who have received nondepolarizing neuromuscular blocking agents in the perioperative period. MIVACRON has been studied to decrease the requirement for intubation in patients undergoing mechanical ventilation in the ICU. MIVACRON should not be used in patients who have received nondepolarizing neuromuscular blocking agents in the perioperative period.

CONTRAINDICATIONS: MIVACRON is contraindicated in patients known to have an allergic hypersensitivity to mivacurium or any of its components. MIVACRON should not be used in patients known to have cholinesterase deficiencies or erythroblastosis fetalis. A known sensitivity reaction to MIVACRON may be life-threatening. Intravenous injection into a patient with a known allergy to benzyl alcohol may cause severe respiratory distress or hypotension.

WARNINGS: MIVACRON must be administered in carefully adjusted dosage by or under the supervision of experienced clinicians who are familiar with the drug's actions and effects. MIVACRON should not be used in patients known to have an allergic hypersensitivity to mivacurium or any of its components. MIVACRON should not be used in patients known to have cholinesterase deficiencies or erythroblastosis fetalis. A known sensitivity reaction to MIVACRON may be life-threatening. Intravenous injection into a patient with a known allergy to benzyl alcohol may cause severe respiratory distress or hypotension.

No data are available to support the use of MIVACRON by intramuscular injection. In patients heterozygous or homozygous for atypical plasma cholinesterase gene, preg- 

Antagonism of Neuromuscular Block: Overdosage may increase the risk of hemodynamic side effects, especially decreases in blood pressure if needed. Cardiovascular support may be provided by proper placement of the patient, fluid administration, and/or vasopressor agent administration.

Geriatric Use: MIVACRON was safely administered during clinical trials to 54 elderly (≥65 years) patients. No data are available to support the use of MIVACRON by intramuscular injection. In patients heterozygous or homozygous for atypical plasma cholinesterase gene, preg- 

Effects: Antagonism of Neuromuscular Block: Overdosage may increase the risk of hemodynamic side effects, especially decreases in blood pressure if needed. Cardiovascular support may be provided by proper placement of the patient, fluid administration, and/or vasopressor agent administration.

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