

# My Two Cents on Scholarly Activity

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The other day I received by e-mail a survey from a resident who was completing his scholarly project requirement. The survey asked a number of personal questions and questions about my medical history. The survey was not accompanied by a cover letter explaining the purpose of the survey, a copy of IRB approval to query physicians across the internet about very personal information, a section that details the privacy and confidentiality issues, or what prior research has revealed about this particular issue. Unfortunately, the survey was typical of many surveys that I receive from residents in an effort to complete their required scholarly activity. The surveys are frequently hastily compiled, not reviewed by a survey methodologist, and not approved by the hospital's IRB.

According to the Program Requirements for Residency Education in Emergency Medicine, put forth by the Accreditation Council for Graduate Medical Education, emergency medicine residency must include "...provision of support for resident participation in scholarly activities. The curriculum should include resident experience in scholarly activity prior to completion of the program. Some examples of suitable resident scholarly activities are the preparation of a scholarly paper such as a collective review or case report, active participation in a research project, or formulation and implementation of an original research project."

In my experience, the most common ways that residents attempted to fulfill this requirement were by writing literature reviews, case reports, or conducting surveys. In my eight years as a co-residency director and residency director, I went from being very enthusiastic about the scholarly activity requirement as an opportunity for emergency medicine residents to see if academia was the right choice for a future career, to realizing that rigors of residency training barely allow enough time for one to become a skilled clinician, read at least one emergency medicine textbook cover-to-cover, and keep up with the medical literature, while trying to maintain some type of balance outside of residency. I also realized that the length of most programs (3 years) allows for few electives and even less time for dedicated research months. As a result, most of the scholarly activity performed is squeezed in during "days off" and hastily completed. Although some residency programs are able to implement a successful research program and consistently recruit residents who are able to complete high quality projects during their training, I have found this to be the exception, rather than the rule.

The purpose of this discussion is not to offer my opinion on this requirement and whether it serves the purpose it seeks to accomplish, but to provide helpful suggestions for those trying to fulfill the requirement. Therefore, this discussion will be aimed at offering helpful suggestions for those residents choosing to write literature reviews, case reports, or conduct surveys in fulfillment of the requirement. A discussion of observational trials and experimental trials is beyond the scope of this discussion.

## The Literature Review

The two types of literature review that I have seen published by residents are literature reviews for peer review journals which cite hundreds of articles pertaining to a single subject, and the clinically based literature review, such as those found in loosely reviewed – but practical – resources, such as computer based texts, etc. that are clinically oriented and designed for use in the emergency department. Performing either type of review forces the resident to obtain a deep fund of knowledge on the subject about which he/she is writing but neither of these forces the resident to critically review the articles for methodological quality, content, and relevance to emergency medicine practice.

A systematic literature review, on the other hand, is a literature review in which evidence from scientific studies is located, evaluated and put together using a well defined scientific design. In fact, the design by which the literature for a systematic literature review has been selected must be reported in the paper itself. The aim of a systematic literature review is to provide a comprehensive and unbiased manuscript that can be used for important decisions in the delivery of health care. Systematic literature reviews include studies that have not been published but which may have an important effect on the conclusions that are drawn, as well as published studies. This means that the resident must be familiar with the field of study and contact experts in the field to discuss unpublished data. A well done systematic literature review will take a resident about a year to complete with proper guidance from a faculty member who is trained in this methodology.

The following stages should be followed in completing a systematic literature review:

- Identify a subject of interest and a question that you wish to answer.
- Make sure that a systematic review on the subject has not been recently published.
- Determine how you are going to review each article.
- Decide the requirements to include an article in your literature review.
- Do a literature search and retrieve all relevant articles.
- Read all the articles and assess them for inclusion in your review based on:
  - Relevance to your question/subject.
  - Your inclusion criteria.
  - Study validity.
- Extract the data from each study for inclusion in your data tables.
- Analyze the data using meta-analysis approach
- You will need someone trained in this area to help you here.
- Write up the manuscript.
- Have a faculty member who is trained in this area review the manuscript.
- Edit the manuscript
- Repeat above two steps until both the resident and faculty member are satisfied with the manuscript.
- Submit the manuscript.

## Case Reports

Case reports are usually derived from an interesting and unusual clinical observation. They tend to describe the presenting signs and symptoms of a disease, its progress, or its response to therapy and may contribute to the identification of new diseases, outcomes of treatment, and recognition of previously unrecognized associations and causes of rare diseases. In fact, case reports are frequently the means by which adverse reactions to drugs are first identified.

The advantages of doing a case report are: they are easy to do and, on rare occasions, may disprove an accepted hypothesis if the case report involves the exception to a previous rule. The weakness of case reports are that they commonly focus on cases which are unusual, which means that the finding may have little practical importance and may not be generalizable. Case reports are definitely not a method for answering research questions and should always be considered as a preliminary observation.

In order to develop a case report, the case must be interesting and have at least one novel element that is previously unreported. This unusual feature might be the ultimate diagnosis, the method of diagnosis, the treatment, or the complications of the treatment. After you have selected your case, further research is

necessary. Begin with a literature search on the subject. Read through all the relevant literature before you start to write. As you read, take notes on relevant points of the literature including study methodology, conclusion, relevance to your case, and quality of the study. The discussion should include relevant features of the case and how you place these findings in the context of the published literature. As you work through your case, compare each fact of your case to previously published data. If the findings match those previously described, state this. If the case you are describing is unusual, try to provide a logical explanation of why and how the management of the case was altered. This should also be done for each abnormal clinical finding or laboratory result. The discussion should also include a few paragraphs explaining the "who cares" aspect of the case. In other words, explain to the reader why you are reporting this case, why they should be interested and how it is relevant to their clinical practice.

### **Surveys**

Surveys in health care have been used to determine knowledge and experience of physicians, activities that physicians perform, educational needs, need for patient services, health beliefs and behaviors, training and experience of staff, as well as a myriad of other questions. According to the Section on Survey Research Methods of the American Statistical Association, the following steps should be taken when designing a survey:

- Determine very clearly what it is you want to measure.
- Generate an item pool using literature review, focused group discussions, expert reviewers, and validation items.
- Determine the format that you are going to measure the responses
- What type of scale are you going to use?
- Have the initial items reviewed by experts.
- Consider including validation items in your questionnaire.
- Pilot the items in a development sample to a small number of people.
- Evaluate the items that you have piloted.

A well planned, newly developed survey will take well over a year to complete. Before beginning a survey, decide who your group of interest is. It is very important that the participants in your survey are representative of this broad group of interest. Next, a list of possible participants must be obtained. If the list of participants is too large for everybody to be studied, a sample should be taken from this list. It is very important that there is an accurate list from which the sample is drawn so that: 1) people aren't forgotten; 2) all people have an equal chance of being included in the sample. The most common methods of choosing a sample are 1) convenience sampling, which consists of selecting those participants that tend to be easy to include; 2) simple random sampling, which means every possible participant will have an equal chance of being selected for the sample; 3) systematic sampling, which means determining a systematic way of choosing participants, i.e. selecting every 20th person on a list to participate.

Surveys are not immune to proper research methodology. A sample size must be decided. It is best to ask a statistician or someone familiar with calculating sample sizes in order to collect a proper number of responses.

Next, the method of sampling must be decided: will it be electronic surveying, telephone surveying, mail survey, in-person interviewing? Self-administered questionnaires are more economical than interviews and more easily standardized. Closed-ended questions are usually easier to answer and easier to analyze. The instrument should be simple and easy to read. All

questions should be preceded by clear instructions and examples. The answers to close-ended questions should be coded in advance and the codes and score should be organized on the form in a way that would make data entry simple and efficient. Residents should make an effort to use existing tools that are known to produce accurate and reliable results. Remember to put sensitive questions later in the survey so those respondents are not immediately put off by your questions. The instruments should be pre-tested before being used in the study. The pretest will help refine the actual survey.

Once the survey has been pilot tested and is ready to mail, residents should plan on a way to track responses. Several mailings and/or calls are usually needed in order to achieve an acceptable response rate to their survey. The data must be entered in a systematic fashion and must be checked to ensure that all forms are completed. Missing data or inappropriate answers should be followed up on. An experienced analyst should analyze the data. Of course, no project is complete until it is published so that the knowledge gained can be shared with others. Manuscript preparation for surveys is similar to that described above.

Common problems in survey studies include the following: poorly defined research questions and too many items on the survey. It is essential to refine the research question and focus it. A survey that is too long, unfocused, and poorly written will have a poor response rate. Remember, the persons who you are surveying are busy and will only respond if they feel that the information they are providing to you is meaningful.

### **Final Thoughts**

Scholarly projects that are well done contribute significantly to the medical literature. They are intended to introduce residents to research methodology and allow residents to experience first hand the excitement of completing a project from idea to publication. Ways to increase the likelihood of conducting a successful project include the following: studying something that people care about, developing a focused project, proper planning, sound methodology, a pilot trial, support from your faculty advisor / mentor and the persons whom you are involving in the study, and adequate resources and expertise to complete the project. On occasion, performance of a successful research project is career altering as the process excites persons who may never have considered a research career to pursue one. I know that this was certainly the case with me.

### **References**

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