

SPECIAL CONTRIBUTIONS

Assessment of the "Scholarly Project" Requirement for Emergency Medicine Residents: Report of the SAEM Research Directors' Workshop

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Abstract. **Objectives:** Differences in interpretation of the residency review committee (RRC) directive concerning resident scholarly activity have resulted in inconsistencies in the practical fulfillment of this responsibility among the various training programs in emergency medicine. During a workshop organized by the SAEM Research Directors' Interest Group (RDIG), a consensus statement was developed regarding the scope, definition, and purpose of the scholarly project requirement. **Methods:** During the workshop, the NIH model of consensus building was used to develop statements pertaining to specific questions of the goals, definition, and endpoints of the scholarly project. The program consisted of an overview of the history and issues related to the scholarly project and presentations of varying viewpoints from interested parties. A final consensus of answers to the defined questions was then developed by the workshop participants during roundtable discussions and further refined through interactive debate using the RDIG e-mail list server. **Results:** By consensus it was agreed that the primary role of the scholarly project

is to instruct residents in the process of scientific inquiry, to teach problem-solving skills, and to expose the resident to the mechanics of research. To realize these goals, the project should include the general elements of hypothesis formulation, data collection, analytic thinking, and interpretation of results. It was also thought that these elements should be documented in some written form with a literature review. **Conclusions:** While each residency program must implement the RRC residency requirements in a manner that best suits the needs and culture of its individual environment, a concurrence of definition and approach to satisfying the scholarly project requirement would provide better consistency in resident training. Guidelines developed by consensus during the SAEM RDIG workshop may serve as a general recipe that can be used to fulfill the goals of the scholarly project and the spirit of the RRC directive. **Key words:** scholarly activity; residency; residency review committee; training programs. *ACADEMIC EMERGENCY MEDICINE* 1999; 6:1160-1165

IN ORDER to comply with residency review committee (RRC) requirements, most training programs in emergency medicine (EM) oblige all residents to participate in a "scholarly project" for completion of their residencies.¹ Variations in opinion as to the nature and purpose of this resident research requirement have resulted in an inconsistency in the practical fulfillment of this responsibility.² During the 1999 annual meeting of the Society for Academic Emergency Medicine (SAEM), a workshop of research directors in EM was convened as organized by the SAEM Research

Directors' Interest Group (RDIG). The purpose of this workshop was to develop a consensus statement from research directors in academic EM programs concerning the RRC residency requirement of the completion of a "scholarly project." During the workshop, the NIH model of consensus building was used to develop a statement concerning the scope and definition of the "scholarly project" requirement in the training of EM residents. Similar consensus-building projects have been successfully developed using this technique.³ The program consisted of an overview of the history and issues related to the scholarly project, an introduction to the consensus-building process, and presentations of varying viewpoints from members of interested parties [Association of Academic Chairs in Emergency Medicine (AACEM), Council of Emergency Medicine Residency Directors (CORD), RRC,

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Emergency Medicine Residents' Association (EMRA)] with open debate on the issues. While these members were not officially designated representatives of their respective groups, they were selected because of their previous fervent work concerning resident education and research issues. A final consensus of definition and answers to specific questions regarding the goals and endpoints of the scholarly project were then developed by the workshop participants in a series of roundtable discussions.

BACKGROUND

Section 14.2 of the RRC residency requirements states that "graduate medical education must take place in an environment of inquiry and scholarship in which residents participate in the development of new knowledge, learn to evaluate research findings, and develop habits of inquiry as a continuing professional responsibility." This activity is described to contain resident experience in scholarly activity prior to the completion of their program. Some suitable examples cited by the regulations include participation in the preparation of scholarly papers such as collective reviews and case reports, and active involvement in an original research project. These regulations have had varying interpretations with widely differing viewpoints from program to program. While some residents are allowed to fulfill this requirement with non-research-based designs such as administrative or community service projects, many programs require completion of original research before graduating.

THE CONSENSUS-BUILDING PROCESS

As defined by the NIH, consensus is the corroborated opinion of those most concerned with the issue. The standard methodology developed by the NIH for developing medical consensus has been previously outlined.³ The SAEM RDIG workshop adopted this NIH model as the template by which a consensus could be reached with regard to the scholarly project issue.

The process began by repeated debate and statements of opinion by RDIG members over a period of several years. Constituents of the group began to survey the various programs in EM to define the current conditions of resident research. These findings were published in a series of articles in an issue of *Academic Emergency Medicine* that focused on academics and education.^{2,4,5} Prior to the workshop, all members of the RDIG were encouraged to review these and other literature from our specialty that had addressed this issue. The group was also encouraged to interact in dis-

ussion of opinions using on-line dialogue through an e-mail server that sends out messages to all members. Finally, a series of specific questions to be answered by the consensus group were formulated.

1. What are the goals of the scholarly project and how can they be ensured?
2. What is a consensus definition of the scholarly project?
3. What is an effective endpoint or measure of the success of the scholarly project?
4. What is the research director's role in facilitating and ensuring completion of the scholarly project?

Notification of the workshop and the questions to be addressed was sent out to all members of the SAEM RDIG and was advertised in the SAEM program announcement for all interested parties. During the first half of the workshop, viewpoints from members of the AACEM, CORD, RRC, and EMRA were presented with time for open discussion and debate. In the second half, workshop participants convened roundtable discussion groups for in-depth discussion of the four specific questions. After reviewing each question, findings of the individual groups were molded into a final consensus by open debate. The final workshop conclusions were documented by the group leaders and subsequently distributed for implementation.

The conclusions of the consensus process may be of limited value if the workshop participants were found to not be truly representative of the entirety of the RDIG and all research directors in general. It is also unclear whether those who presented the various viewpoints were representative of all interested parties or were simply bringing personal preconceived opinions. The approximately 40 participants at the workshop is only a small portion of all those who regularly participate in ensuring completion of the residents' scholarly projects. However, this number does represent a significant percentage (about 55%) of the membership of the RDIG. It also is typical of the group that regularly attends the RDIG meetings at the annual SAEM conference. To ensure that the consensus findings were in accord with the sentiments of the group at large, the results of the workshop were disseminated to the RDIG through the e-mail list server for further debate and consideration. The feedback from this distribution was also incorporated into the final consensus.

OVERVIEW OF THE PRESENTED VIEWPOINTS

As an important part of the consensus-building process, it is necessary to embrace many varied viewpoints or perspectives of those interested in

resident education in order to obtain an objective opinion.

Many of the departmental chairs rose through the ranks by academic achievement and often were previously in the position of research director or residency director. They also have the broad view of the development of the specialty as a whole and understand the function of research in establishing our credibility in the world of medicine.⁶ It is clear that the departmental environment for research must begin at the level of the chair. The chair is also ultimately responsible for the departmental standards and sets the bar for the requirements and definition of research and the scholarly project. Success in scholarly activity is a function of interest and ability divided by the time required to complete the project. The chair balances departmental resources and personalities so that there is a system of interaction between residents with talent and passion and faculty with the ability and interests to produce a collaborative symbiosis.

Residency directors view the scholarly project requirement in the context of the entire resident training program. There is some evidence suggesting that there is anecdotal unhappiness with regard to the way the resident "research" requirement has been approached in the past.^{1,7} The residency director is most interested in providing a training experience that will satisfy the individual resident with an education that will meet the needs of his or her future career. For the resident with no academic aspirations, the rigors of the prospective randomized trial not only seem irrelevant but also distract from other potential learning experiences. A choice of scholarly projects that include administrative and community projects as well as graduate and business courses may have more "career value." The development of diversified residents may serve not only the individual but also the specialty as a whole as we face an ever-changing practice environment. Documentation of completion of these diversified projects is still important and may be a written thesis or attainment of a certain grade.

A lack of academic productivity is the most common program citation by the RRC. However, the RRC views the directive of scholarly activity from a unique perspective. Rather than focusing on the work of any individual resident or project, the committee is more concerned with the academic emphasis of the department as a whole. The department should demonstrate a collective environment of scholarly activity involving all faculty and residents in varying degrees. In this sense the mandate of Section 14.2 to provide an environment of scholarly activity is directed toward the faculty as much as it is to the resident. If one individual (a hired gun) produces the bulk of the research for-

the department, this does not constitute a climate of scholarly activity. The scholarly project is considered as just one aspect of the curriculum (along with journal clubs and didactic session) for training residents in the methods of analytic thinking.⁸

Emergency medicine residents are themselves quite divergent in their beliefs of what a scholarly project should entail.^{2,4,5} While most residents still think that the requirement is an important aspect of their training, many openly acknowledge that they would not do research or any scholarly activity if it were not required. Support for resident research by the residency director and other faculty, departmental resources, and protected time are important factors improving compliance and enhancing the research experience. Residents seem to respond better to rewards and encouragement rather than punitive measures and "pep" talks.^{4,5}

GOALS OF THE SCHOLARLY PROJECT

To develop a meaningful definition for the scholarly project, it seems only logical to first clearly understand the intended goals of this requirement. Typical statements concerning these goals are derived in part from the writings within the RRC residency requirements and seem intuitively obvious. However, the considerable experience of research directors through years of practical implementation of these requirements have resulted in new insights into the function of the scholarly project in the education and development of residents.

With EM being a fledgling specialty, it was paramount in the early years that we establish some degree of credibility as a field with a sound foundation based in science. It was also important that we develop our own independent body of knowledge. While these objectives remain a priority for our continued growth as a specialty, research directors consider these activities to be primarily the responsibility of the faculty of EM and should not depend on resident research.

Almost everyone agrees that the primary role of the scholarly project is *to instruct residents in the process of scientific inquiry*.⁹ By learning the elements and mechanisms of this process, the resident is to achieve a better understanding of the medical literature and acquire the tools that will enable the independent critical evaluation of scientific evidence. There are some who would argue that it is not necessary to actually do research to understand research and that most all the skills that are needed can be taught in didactic sessions. However, this may be like assuming that the resident can perform a cricothyroidotomy because he or she has been lectured on the technique. While it is clear that the scholarly project serves some role in teaching residents the methodology of re-

search, it is considered as only a supplement to the overall research curriculum that also includes journal clubs and didactic lectures.

Other realized goals of the scholarly project include:

1. To teach problem-solving ability. It has been noted that the basic elements used in the scientific method (observation, hypothesis formulation, testing of hypothesis, and analysis of data) are similar to the process used in the clinical evaluation and diagnosis of patients.
2. To learn the art of medical writing. The technical skills needed to produce well-written documents are not taught during medical school and are rarely emphasized during premedical training. However, even the nonacademic practitioners are often faced with the daunting task of writing protocols or policy statements during their medical careers.
3. To expose the resident to research for consideration of an academic career. It has been well documented that residents who have had some research experience are more likely to pursue academic careers.¹⁰ In fact, it is often thought that the fear of having to do research is one of the greatest barriers to a decision in favor of an academic career.
4. To focus an area of interest or expertise. While areas of subspecialty or fellowship training are still uncommon in our field, the scholarly project has been noted by some research directors to focus certain residents on a specific subject of interest or aptitude (EMS, toxicology, critical care, etc.). These individuals may also then become superexperts in some specialized treatment or pathology (e.g., snakebites or hyperbarics).

DEFINITION OF THE SCHOLARLY PROJECT

The scholarly project is usually described in terms of examples of activities that are deemed acceptable to fulfill the residency requirements (prospective studies, case reports, etc.). From our identification of the goals of the scholarly project and an analysis of the problems in consistency in interpreting the RRC residency requirements, it became clear that any definition of the scholarly project should focus on process and not product. In this approach any resident undertaking that attempts to satisfy the scholarly project requirement should contain the general elements that demonstrate the process of the scientific method.⁹ These elements should include:

1. Problem identification and/or hypothesis formulation.
2. Some form of information gathering or data collection.

3. An analysis of data or some evidence of analytic thinking.

4. A statement of conclusion or interpretation of results.

There is further consensus that these elements should be documented in some written form. When appropriate, that written form should follow the guidelines described in the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" as is typical of most "instructions for authors" in leading medical journals.¹¹

This *process not product* approach has been embraced enthusiastically by many research directors and appears to be a recipe that is applicable over a broad range of possible projects. However, this consensus definition is intended to serve only as a general guideline that is borne out of the collective experience of the RDIG. Each individual program must ultimately determine an approach that best meets the needs of their department.

EXAMPLES

To demonstrate the application of this consensus definition of the scholarly project, several examples have been described and analyzed to determine whether they might contain the required elements of the scientific process. Certain types of resident projects such as the classic prospective randomized trial and most bench studies would appear to naturally rise to the standards of what we call scholarly activity. However, anyone who has reviewed the manuscript of a poorly devised study can attest to the risk of allowing labels alone to measure the quality of the work. This is also the reason for the failure of the product description method for defining the scholarly project. By determining the presence of the key elements of the process that defines a scholarly project and achieves the common goals of resident training, almost any submitted work can potentially be found to be acceptable, regardless of its product label. It may seem unclear how some of the more unconventional projects (community projects, software development, administrative projects, case reports, etc.) fit the proposed formula for scholarly activity. During the consensus-building process, many example scenarios were examined to test the applicability of the recommended criteria over a wide range of possibilities. Some of these examples are presented for clarification.

The Case Report. Does the "case report" meet the standard of scholarly activity? While it may be difficult to apply the consensus definition in some cases, it is feasible for case reports to include the elements described. If the report does not appear

to satisfy the necessary conditions as submitted for publication, then it may be possible to compile an expanded in-house version for completion of the project requirements.

In applying the consensus definition of the scholarly project, consider the patient case as an $n = 1$ investigation.^{9,12} It is clear that a specific problem can be defined as the patient's chief complaint and the hypothesis is the differential diagnosis. The requirement of information gathering is satisfied by the data acquired during the physical and laboratory examinations as well as the literature review obtained while exploring the prevalence and nuances of the case's pathology. If there are also a thorough discussion and analysis of the case using an evidence-based approach with appropriate conclusions, then the case report will meet the goals of the scholarly project.

The Community Project. Even seemingly non-scientific endeavors may meet the proposed criteria of the scholarly project. Suppose a resident defines a medical problem within the community. 1) There has been a noted increase in the prevalence of cellulitis in patients coming to the ED from a particular nursing home. Once the problem is identified, a logical hypothesis may be described. 2) Infection is being transmitted by nursing assistants because of a lack of adequate hand washing. Data collection can be an important aspect of the project. 3) Cultures are taken of the assistants' hands before and after the initiation of a hand-washing campaign. The data can then be analyzed. 4) The rates of positive staphylococcal and streptococcal cultures can be compared before and after the change in hand-washing practices and correlated with the prevalence of cellulitis in the nursing home population. Conclusions from this project can really benefit the community. 5) Increasing hand washing among the nursing home staff will have a significant impact on the rate of cellulitis in this patient population.

Development of Medical Software. Developing medical software can be a rigorous undertaking that undoubtedly requires advanced scientific skills. However, such a project may not necessarily contain all the elements needed to instruct the resident in the process of the scientific method. Though the activity may involve problem identification, information gathering, analysis, and a conclusion, there is concern that there may not be adequate documentation of these elements in these types of projects. Most professional software packages come with some documentation in the form of a manual. If the resident-produced software is documented with a manual that contains the elements contained in the research director's definition of

the scholarly project, then this could possibly satisfy the requirement.

ENDPOINTS AND MEASURES OF SUCCESS

Unlike many other aspects of the residency training experience, there is no test or practicum to determine whether the resident has acquired the knowledge or skills that are the goals of the scholarly activity requirement. The beauty of the process-over-product approach to defining the scholarly project is that by requiring that all the elements of this definition are present, we can at least be assured that the resident has gone through the steps of scientific inquiry. It was the consensus of the RDIG that the minimal endpoints should include:

1. All elements in the definition of the scholarly project.
2. Documentation in a written form.
3. Some form of literature review.

As previously noted, there should be some documentation in a written form that is typical of the "information for authors" format. While a considerable portion of resident research activity never makes its way into the literature, it is believed that there is value in retaining this new knowledge for future reference. This is particularly true of some of the nontraditional activities such as administrative or community projects that might not necessarily be appropriate for publication. This information may be valuable for local if not national consumption in future efforts. Some form of departmental documentation and local storage (departmental or institution library) similar to that for dissertation records may provide a way to measure that the project has been accomplished and contains the desired endpoints. Instituting this form of record keeping also ensures that even collaborative studies performed by residents will satisfy the goals stated. Even if a resident is not the first author in the published version of the study and primarily responsible for the overall completed work, he or she should provide a completed documentation with all the elements in place.

ROLE OF THE RESEARCH DIRECTOR

The position of research director is unique to our specialty. Hence, there are no traditions or standards to define the role of this position in the research environment of the department. The job description of the research director is a common topic in the RDIG and there has been a recent effort by our membership to describe the activities that are being performed by research directors throughout the country.^{2,4,5} It is in the case of the resident research requirement where research directors have

found their role most confusing. While the charge to see that all residents complete this requirement is often left in the hands of the research director, we are often left with the feeling of being in a position of responsibility without authority. It is the consensus of the RDIG that the resident research requirement is not the lone responsibility of the research director and should be shared by the program directors. In fact, it is a common notion that a resident's research should be overseen by a committee that should include the research director, program and residency directors, and the resident's faculty advisor. This committee would then have the capacity to police the resident's activity and make the hard choices concerning punitive measures such as restricting moonlighting or withholding certificates. The committee could use the general consensus guidelines defined herein to assist in determining whether the resident has met the requirements for scholarly activity. It is thought that the committee should meet at regular intervals (quarterly, semiannually) to ensure that the resident is on track to project completion and to determine whether it meets the standards of scholarship.

While the research director may not have sole responsibility for ensuring residents satisfy their scholarly activity requirements, they have an immense duty to:

1. Help set the philosophy and guidelines for scholarly activity.
2. Provide quality assurance in project development (FINER criteria¹³).
3. Check timelines for project completion.
4. Help create a departmental environment for research.
5. Help provide tools and resources for research.
6. Act as a motivator for scholarly activity among the residents.

CONCLUSIONS

The RDIG is aware that each residency program must interpret and implement the RRC regulations in a manner that best suits the needs and culture of its individual department. However, through discussions in our annual meetings, it

came to the attention of many of our members that there was little consistency between programs as to the manner in which the scholarly project requirement for residents was being accomplished. This was of particular concern to new research directors who were looking for some direction from our group as to how to best succeed in this aspect of their work. The workshop derived consensus definition for the scholarly project and the ensuing methodologies described for the implementation of these guidelines are intended to serve only as a general recipe that we believe best satisfies the goals of the scholarly project and the spirit of the RRC directive.

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