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**BREAKOUT SESSION**

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# Defining A Core Curriculum for Education Scholarship Fellowships in Emergency Medicine

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**Abstract**

A trained cadre of medical education scholars with a focus on methodologically sound research techniques is needed to ensure development of innovations that can be translated to educational practice, rigorous evaluation of instructional strategies, and progress toward improving patient care outcomes. Most established educational programs are aimed at existing faculty members and focus primarily on the development of teaching and leadership skills. At the 2012 *Academic Emergency Medicine (AEM)* consensus conference, "Education Research in Emergency Medicine: Opportunities, Challenges, and Strategies for Success," a breakout session was convened to develop training recommendations for postgraduate fellowship programs in medical education scholarship that would enable residency graduates to join academic faculties armed with the skills needed to perform research in medical education. Additionally, these graduates would enjoy the benefits of established mentorships. A group of 23 medical education experts collaborated to address the following objectives: 1) construct a formal needs assessment for fellowship training in medical education scholarship in emergency medicine (EM), 2) compare and contrast current education scholarship programs in both EM and non-EM specialties, and 3) develop a set of core curriculum guidelines for specialized fellowship training in medical education scholarship in EM. Fellowship-trained faculty need to be proficient in learner instruction and assessment, organizational leadership, curriculum development, educational methodology, and conducting generalizable hypothesis-driven research to improve patient care.

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In recent years, the scholarship of teaching<sup>1,2</sup> has gained acceptance at major medical centers as a means for promotion and tenure through clinician-educator pathways. In these academic tracks, faculty are evaluated on the quality of their teaching and educational products, such as curricula, teaching evaluations, innovations, and other items contained in the standard educator's portfolio.<sup>3,4</sup> Measuring the success of a particular innovation or curriculum remains difficult. Typical evaluation strategies include learner satisfaction surveys, nonexperimental study designs, and descriptive reporting.<sup>5</sup> Many studies are conducted at single institutions and have small sample sizes. While it is important to pilot innovations, the results garnered from a single site are difficult to generalize.<sup>6-8</sup> Kirkpatrick et al.<sup>9</sup> proposed a widely accepted model for evaluating training programs that consists of four levels: reaction, learning (often applied to classroom proficiency), behavior (often applied to behavior in the clinical setting), and results (as measured by a change in professional practice or patient outcomes). Eliciting a measurable clinical outcome that can be attributed directly to an educational intervention is desirable, yet quite difficult, as it requires higher level research methods.

Some residency programs have instituted curricula that help residents develop and refine their teaching skills.<sup>10,11</sup> However, there is little formal training in conducting hypothesis-driven medical education research. Since promotion and tenure committees value scholarly productivity, additional training is needed to achieve proficiency in standard methodologic techniques. Rigorously tested educational interventions at Kirkpatrick level 4 are more likely to have external validity than untested interventions and have the potential to yield improved patient care outcomes.

Graduates of accredited emergency medicine (EM) residency programs who wish to pursue academic careers typically benefit from additional, focused fellowship training in their intended areas of expertise, such as critical care medicine, emergency medical services, hyperbaric medicine, pediatric EM, sports medicine, or toxicology, which can all lead to subspecialty board certification by the American Board of Emergency Medicine, and administration, education, geriatrics, research, or ultrasound, which at the present time do not. Ideally, this occurs prior to faculty appointment, as fellowship training enables focused time for skill development under the guidance of a dedicated mentor.<sup>12</sup> Evidence of the effectiveness of fellowships can be found in other fields. In family medicine, fellowship-trained faculty were more productive researchers and were more likely to achieve senior academic rank than their non-fellowship-trained counterparts.<sup>13</sup> Similarly, academic surgeons who did research fellowships were more satisfied with their careers than were non-fellowship-trained faculty.<sup>14</sup>

Currently, there are limited opportunities for fellowship training in medical education. Most are offered at the university level to existing faculty who have identified a need for supplemental training.<sup>15-25</sup> Many of these programs focus primarily on the principles of teaching, curriculum design, and learning theory and only secondarily on education research methods. Faculty who participate in these programs must carve out time in their already busy schedules to devote to skill development. The investment, however, seems to be worthwhile. In a recent evaluation, Lown et al.<sup>26</sup> reported several personal and professional benefits to the individuals, which included a strengthened sense of self-efficacy, support from the educator community, and an enhanced knowledge base of educational principles.

We postulate that a dedicated, mentored fellowship in medical education scholarship would be an ideal opportunity to prepare residency graduates for productive careers in academic EM. The objective of this article is to develop a consensus opinion regarding the development of formal postgraduate fellowships in medical education scholarship. Graduates would be trained in curriculum development, learner assessment and instruction, and education scholarship with a strong emphasis in conducting rigorous, generalizable, hypothesis-driven research that has the potential to improve outcomes.

To meet this objective, a breakout group was convened at the 2012 *Academic Emergency Medicine (AEM)* consensus conference, "Education Research in Emergency Medicine: Opportunities, Challenges, and Strategies for Success," whose mission was to address

education researcher training at the fellowship level. Four members of the breakout group (WC, ML, LY, and NS) developed priorities for discussion at the breakout session that included the following topics:

1. Construct a formal needs assessment framework for EM fellowships in medical education scholarship.
2. Compare and contrast current education scholarship programs in both EM and non-EM specialties.
3. Develop a set of core curriculum guidelines for specialized fellowship training in medical education scholarship in EM.

These objectives were further refined by our group, which was composed of expert EM faculty whose academic focus is medical education, medical education researchers, educational leaders, current and past medical education fellowship participants, and external expert consultants in the field of medical education. The opinions and suggestions for future investigation are reported.

### **QUESTION 1: IS SPECIALIZED POSTGRADUATE TRAINING IN EDUCATION SCHOLARSHIP A WORTHWHILE INVESTMENT OF TIME AND RESOURCES?**

Many fellowships with a clinical focus are available to graduates of EM residency programs, including critical care medicine, emergency medical services, hyperbaric medicine, pediatric EM, sports medicine, and toxicology, which offer additional subspecialty board certification. Institutional research fellowships in EM are eligible for certification by the Society for Academic Emergency Medicine (SAEM).<sup>27</sup> It is reasonable to assume that a newly hired faculty member with specialized fellowship training, an existing research focus, a track record of academic productivity, and an established mentor relationship would be a valuable addition to an academic department. However, faculty hired for educational career tracks rarely have preexisting training in teaching methods and education research.

To assess the current state of education scholarship fellowship training in EM, a comprehensive literature search on PubMed, ERIC, and PsycInfo was conducted, using the search terms "curriculum," "education," "education research," "emergency medicine," "fellowships and scholarship," "learning," "medical education fellowship," "mentors," "professional competence," "program development," "staff development/methods," and "teaching methods." Additionally, we searched "related articles" to the relevant papers. This search strategy yielded no publications discussing postresidency education fellowship programs. We learned that most educational programs are offered by individual medical schools for existing faculty. These faculty development programs provide faculty participants with fundamental skills to be successful clinician educators and leaders.<sup>19,28-31</sup> The curricular content varies by institution, but topics often include teaching strategies, curriculum development, evaluation, and an introduction to research methods. In most programs, the focus is on teaching strategies and development of institutional leaders, as opposed to a rigorous training in research methodology. One university developed a

specialty-specific academy whose focus was education and leadership that included training in research methods.<sup>32</sup>

A national initiative to promote faculty skill development in the area of education research is the Medical Education Research Certification (MERC) program. It was conceived by the Association of American Medical Colleges (AAMC) section on research in medical education. Medical educators who complete six workshops receive a certificate. These workshops have been incorporated into various university-sponsored faculty development programs as a curricular component.<sup>33,34</sup> In 2009, the Council of Emergency Medicine Residency Directors (CORD) partnered with the AAMC to create an EM-specific, mentored, collaborative research training experience to address a paucity of formal training in education research for EM educators. Attendees at the inaugural MERC at CORD workshop indicated that a “lack of training in education research” was the primary barrier in preventing their education research project(s) from being published. Most admitted that if they had conducted a research project previously, it was most likely in one institution and did not follow a rigorous protocol.<sup>35,36</sup> Throughout the literature, it is evident that there is a need for formal training in education research. Multiple attempts to provide training for existing faculty have been undertaken to address perceived shortcomings in their preparation to function productively in the academic environment. We believe that new faculty members who assume their academic positions with an existing skill set will be better positioned to be successful academic scholars. A dedicated education scholarship fellowship aimed at residency graduates is an ideal means to produce academic faculty who are ready to excel as scholars.

### Training Needs Assessment Framework

In four focus groups, participants of the breakout session discussed the value, training gaps, and challenges of an education scholarship fellowship. The groups consisted of members who were department chairs, educational leaders, established researchers, fellowship directors, fellowship graduates, and current education fellows. We came to consensus that we must first gain the perspective of EM stakeholders, who include department chairs, educational leaders (deans, vice-chairs of education, residency directors, undergraduate medical education directors), and education fellowship personnel (directors, graduates, and current education fellows). Predominant issues that were discussed included funding models, how an academic department gauges the success of an education scholar, and advanced degrees. Using the input from the consensus-building session, we constructed a plan to conduct a formal, mixed-methods needs assessment to inform the development of an education scholarship fellowship.<sup>37</sup>

### QUESTION 2: WHAT ARE THE BEST PRACTICES IN CURRENT EDUCATION SCHOLARSHIP PROGRAMS, INCLUDING FELLOWSHIPS AND ADVANCED DEGREE PROGRAMS?

Most formal programs in medical education offered by medical schools and societies focus on skills essential for

teaching, such as adult learning theory, didactic and small group learning, simulation, giving feedback, working with the problem learner, curriculum development, mentoring, evaluation methods, writing multiple choice questions, teaching the ACGME core competencies, leadership development, understanding of academic promotions and tenure committee procedures, self-reflection techniques, and development of the educator’s portfolio.<sup>15,17–20,22,25,30,31,38,39</sup> While most of these curricula devote a variable portion of time to scholarly topics, this is generally not their primary focus. A limited number of opportunities, such as the AAMC MERC and MERC at CORD programs, exist specifically to develop research skills that focus on methods suited to medical education. Although these educational programs are successful and fill a void in formal training for existing faculty, we postulate that a graduate of an EM residency program who develops expertise in medical education scholarship *prior* to embarking on an academic career will be in a better position to integrate as an academic faculty member and will have a successful scholarly trajectory.

A few fellowships in medical education are offered currently for graduates of EM residency programs and require an additional 1 to 2 years of postresidency training. An increasing number of programs favor 2 years to allow ample time for career development, completion of research, scholarly pursuits, and achievement of advanced degrees; however, there is no uniform curriculum or structure. Some fellowships focus primarily on teaching, while others encompass both teaching and research. Two examples of established medical education fellowships that focus on scholarship are described in this issue of *AEM*.<sup>40</sup>

We consulted the SAEM Fellowship Directory<sup>41</sup> and performed a Google search to identify existing education fellowships in EM and recorded available information with clarification by direct communication with program representatives. A summary of common themes and curricular elements is described, and details are outlined in Table 1. All programs require the fellow to work clinical shifts, typically in the role of attending physician. The number of hours required varies across programs. When the focus of this fellowship is education scholarship, many programs offer the opportunity to complete an advanced degree, and at three institutions, it is required. The type of degree depends on the resources available at the institution and include, Masters in Public Health, Education, Clinical Research, Clinical Science, and Health Professions. Funding for advanced degrees is highly variable across programs and may be funded by the individual fellow, the sponsoring institution, extramural support, department of EM, or a combination thereof. One-year fellowships typically do not offer advanced degrees. In addition to, or in place of, advanced degrees, some fellowships offer entry into university-based certificate programs, which provide formal training in educational techniques and/or research. Several programs encourage their fellows to attend organization-sponsored faculty development programs, such as the American College of Emergency Physician’s Teaching Fellowship, MERC at CORD, and the “Navigating the Academic Waters” seminar series.<sup>35,36,38,39</sup>

Table 1  
Current Fellowships in EM Education

Institution	Duration (Years)	Advanced Degree Requirement	Availability of Advanced Degree: Type	Certificate Program Available	Clinical Attending Shifts per Month	Academic Appointments	Administrative Leadership Opportunities	Formal Teaching Training	Formal Research Training	Research Requirement
Denver Health Medical Center/University of Colorado	2	Yes	Masters in Education	No	5	Clinical Instructor	Residency Program Advisory Committee Education Committee for Residency Program School of Medicine Advisory board for academy of medical educators	Yes	Yes	Yes
Emory University School of Medicine	1 or 2	No	Masters in Public Health, Masters in Education	No	8	Clinical Instructor	No	Yes	No	No
Harbor-UCLA Medical Center	2	No	Masters of Public Health, Education, or Doctor of Education	Yes	7.5	Clinical Instructor	Education Committee Member UCLA Acute Care College Advisory Board with leadership position in area of interest Assistant Clerkship Director for EM sub-I Residency program administration Coordinates weekly M&M conference Residency administration/ education assistance	Yes	Yes	Yes
Maimonides Medical Center	2	Yes	Masters in Education	No	9	None		Yes	Yes	Yes
Johns Hopkins University	1	No	Masters in Health Professions Education courses available	No	9	Clinical Instructor		Yes	No	No
Oregon Health & Science University	2	Yes	Masters of Public Health, Masters of Clinical Research	Yes	7	Clinical Instructor	Education Committee Member Function as Assistant Program Director Preclinical course faculty Oversees chief residents Variable depending on fellow interest	Yes	Yes	Yes
Stanford University	1	No	N/A	No	7	Clinical Instructor	Associate Director of the Emergency Medicine Research Associates Program	Yes	Available	No
University of California, Irvine	2	Yes	Masters of Health Professions, Masters of Clinical Science, Masters of Public Health	No	7.5	Clinical Instructor		Yes	Yes	Yes



Table 1  
(Continued)

Institution	Duration (Years)	Advanced Degree Requirement	Availability of Advanced Degree: Type	Certificate Program Available	Clinical Attending Shifts per Month	Academic Appointments	Administrative Leadership Opportunities	Formal Teaching Training	Formal Research Training	Research Requirement
University of California, San Francisco	1 or 2	No	Masters of Education	Yes	6	Clinical Instructor	No	Yes	No	No
University of Pittsburgh	1 or 2	No	Master's in Education, Masters of Public Health	Yes	5	Clinical Instructor	No	Available	Available	No
University of Virginia	1 or 2	No	Masters of Public Health	Yes	8.5	Clinical Instructor	No	Available	Available	Yes

Summary of features of existing EM fellowship programs in medical education, including both teaching and scholarly fellowships.  
M&M = morbidity and mortality.

About half of the existing fellowships provide formal training in research and require that the fellow complete an original research project prior to graduation. Of the programs that do not explicitly require the completion of a research project, many require the fellow to produce at least one piece of scholarly work pertaining to medical education. In addition to these components, many have elements pertaining to career development. The majority of the medical education fellows are appointed to the rank of clinical instructor and several are required to serve in varying administrative leadership roles. Funding for current medical education fellowships is usually provided by the clinical shifts worked by the individual fellow, although many departments also provide a stipend for educational endeavors, including conferences and instructional programs. Extramural funding is also available, but not common.

Based on this knowledge, our consensus breakout group identified a list of best practices to inform our discussion on core curricular elements for a medical education scholarship fellowship. As a means of comparison, we also examined the curriculum of traditional pathways for advanced training in education research, such as master's and doctoral programs. Results of our query are summarized in Table 2. It appears that there are several common features such as pedagogy, curriculum design, assessment, program evaluation, and research methods. Masters-level programs currently associated with fellowship programs include degrees in public health domains (MPH), clinical research (MCR), administration and leadership (EdM), or the discipline of education (MA or MS), with some focus on investigation. Isolated programs aimed at health professionals award a Masters in Health Professions Education (MHPE). Doctorate-level education programs in the United States fall into two basic formats, the EdD and the PhD. While there is a high degree of variability among programs, PhD programs traditionally focus on hypothesis-driven or qualitative research methods and educational theory, while EdD programs are geared more toward the areas supporting educational practice, such as administration, leadership, and policy. A few doctoral programs are devoted specifically to health professions education and research and allow for a high degree of individualization and interdisciplinary focus in the course of study.

**QUESTION 3: WHAT SET OF CORE CURRICULUM GUIDELINES FOR SPECIALIZED FELLOWSHIP TRAINING IN MEDICAL EDUCATION SCHOLARSHIP IN EM IS MOST APPROPRIATE?**

The consensus group decided that medical education fellowships should be generally divided into two categories. First are teaching-based fellowships that focus on pedagogy, curriculum design, assessment methods, and career development where research is a secondary focus. Second are the fellowships whose primary focus is education scholarship, which focus equally on educational principles as well as rigorous research methods. The recommendations of our breakout session address only the latter group, which attempts to increase the pool of education scholars who can conduct hypothesis-driven

Table 2  
Common Curricular Elements of Advanced Degree in Education

Program Type	Duration (Months/Credit Hours)*	Teaching Components	Research Components	Funding	Outcomes
Master of Health Professions Education (MHPE)	2–3 years or until credit requirements are satisfied (range = 32–40 credits).	Most do not have explicit teaching or instructional components except as electives.	A broad definition of educational scholarship is encouraged. Qualitative and quantitative research components are included as either elective or required courses.	Individual or employer support from the sponsoring institution is needed. Tuition scholarships or grants are generally not available.	Focus on clinician educators seeking additional training in educational scholarship and for future administrative positions.
Doctor of Philosophy (PhD)	3+ years, 70 credit-hours.	Include coursework in curriculum design and assessment; some offer concentrations in teaching (focus in elementary and secondary education).	Heavily oriented toward experimental research design and statistical methods; dissertations tend toward experimental and quasi-experimental research.	Variable. Some are funded via grants (e.g., IES) or scholarships or require teaching assistance	Geared toward university-level teaching and academic scholarship.
Masters in Education (MA and EdM)	Typically 1–3 years full time. Part-time and online students often require longer time to complete degree requirements (widely variable degree requirements).	General education programs do have practical teaching experience on a focused grade level such as early child, elementary, or secondary education.	General education programs rarely have a dedicated research component but instead may focus in a special area such as counseling, administration or educational technology.	Variable. Some are funded via grants (e.g., IES) or scholarships. Tuition subsidies or vouchers are sometimes available from employers.	Graduates enter into primary, secondary, and administrative educational positions. Some clinician educators have pursued this option for augmented educational training.
Doctor of Education (EdD)	2–3 years (often 60 credit-hours). Many programs designed to be part-time	Coursework in curriculum design and assessment; some include “field experience” in teaching	Programs include fundamentals of statistical analysis and research methodology; dissertations tend toward descriptive research	Variable. Typically self-funded.	Varied (administrative leadership, education policy, academic teaching, and scholarship).

\*Some credit may be available for prior work, e.g., MD degree.  
IES = Institute of Education Sciences.

quantitative or qualitative research in EM. Furthermore, we recognized that to conduct appropriate research, an education scholar should be well versed in teaching and evaluation methods. For that reason, a fellowship program that includes an evidence-based approach to teaching and a rigorous training program in education research techniques is essential. Therefore, our proposed consensus-driven curriculum will be based on mastery of both of these domains and will take place over a 2-year period. We believe fellowships that focus primarily on teaching methods could benefit from our work as well, as we have garnered the opinions of many experienced educators throughout our process. The core content for a comprehensive curriculum in medical education scholarship should feature the following curricular components: 1) research, 2) didactic, 3) faculty development, 4) clinical, 5) administration, and 6) service. Following the consensus conference, a working group refined these ideas to propose an official core content document.<sup>42</sup>

## SUMMARY

The development of a dedicated fellowship in medical education in EM that focuses on research methodology could lead to improved scholarship in this domain. Graduates of such fellowships would be ready to embark on their academic careers with all the tools needed to become established education scholars in academic departments of EM. Upon arrival, these new faculty members would have the background and skills in teaching and evaluation, education research methods, and existing mentors and collaborators to produce scholarly output using hypothesis-driven studies that could be generalized to multiple institutions or qualitative inquiries to inform future research. These well-educated fellowship graduates would have the potential to positively affect patient care outcomes. This consensus panel identified key components for a formal needs assessment, evaluated existing training programs, and developed a framework for a recommended curriculum for a 2-year fellowship in medical education scholarship.

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