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BREAKOUT SESSION

A Suggested Core Content for Education Scholarship Fellowships in Emergency Medicine

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Abstract

A working group at the 2012 *Academic Emergency Medicine* consensus conference on education research in emergency medicine (EM) convened to develop a curriculum for dedicated postgraduate fellowships in EM education scholarship. This fellowship is intended to create future education scholars, equipped with the skills to thrive in academic careers. This proceedings article reports on the consensus of a breakout session subgroup tasked with defining a common core content for education scholarship fellowships. The authors propose that the core content of an EM education scholarship fellowship can be categorized in four distinct areas: career development, theories of learning and teaching methods, education research methods, and educational program administration. This core content can be incorporated into curricula for education scholarship fellowships in EM or other fields and can also be adapted for use in general medical education fellowships.

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This paper reports on a breakout workshop session of the 2012 *Academic Emergency Medicine* consensus conference, "Education Research in Emergency Medicine: Opportunities, Challenges, and Strategies for Success," May 9, 2012, Chicago, IL.

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During the 2012 *Academic Emergency Medicine* consensus conference "Education Research in Emergency Medicine: Opportunities, Challenges, and Strategies for Success," a breakout session focused on defining a curriculum for education scholarship fellowships in emergency medicine (EM). While there are a limited number of postgraduate medical education fellowships currently being offered in EM,¹ this dedicated postgraduate training model has not been described formally in either the EM or the general medical education literature. Furthermore, few existing EM education fellowships focus specifically on developing education research skills to create education scholars who will thrive in academic career tracks.

The results of the general proceedings, which proposed the definition, rationale, and suggested structure for education scholarship fellowships, are described separately.² However, participants and experts at the breakout session agreed that there is an immediate need for a consensus-driven core content for education scholarship fellowships that provides fellowship directors with an outline of the knowledge, skills, and attitudes that should be taught explicitly in an education scholarship fellowship.

The aim of this article is to expand on the framework presented in the general session proceedings paper² by proposing a core content for a 2-year EM education scholarship fellowship that can be directly applied by

fellowship directors currently initiating similar fellowships in EM. This content is presented in a manner that allows it to be adapted easily for use in medical education fellowships with a teaching focus, as well as education fellowships in other medical specialties.

METHODS

Prior to the consensus conference, a task force of medical education scholars developed a preliminary list of core content based on a literature search of existing faculty development opportunities, comparison of unpublished curricula from existing medical education fellowships, and expert consensus. The methods and results of the literature search are described separately.² A breakout group convened during the conference to address education researcher training at the postgraduate fellowship level. A 15-minute didactic presentation defined the scope, intended goals, and focus of an education scholarship fellowship and explicitly differentiated this training format from programs that focus primarily on teaching. Participants were then divided into focus groups for 45-minute facilitated discussions to review and revise the draft list of core content for an education scholarship fellowship program. The sessions were audiorecorded and hand-transcribed. Consensus-based and small-group qualitative techniques were used to generate broad themes for content categories and then prioritize important topics. Both open-ended questioning and structured review of the proposed outline were used to generate new ideas, organize content around emerging themes, and come to consensus about the core content of an education scholarship fellowship. Transcripts were iteratively reviewed to ensure that the final core content was complete and reflective of both expert and participant consensus.

RESULTS

At the conclusion of the consensus conference, attendees of all breakout tracks reconvened and participated in a large-group poll using audience response technology. The majority of respondents indicated that fellowships should adhere to specific program requirements and follow a common curriculum. We propose that the core content of an EM education scholarship fellowship can be categorized in four distinct areas: career development, theories of learning and teaching methods, education research methods, and educational program administration. The suggested core content outline for each of these areas is presented in Table 1.

DESCRIPTION OF CONTENT

Career Development

This content area represents the knowledge, skills, and attitudes that an academic education scholar needs to know to meet the expectations of a promotion and tenure committee and succeed in an academic career. We propose the following specific content.

The Scholarship of Teaching. An early introduction to Boyer's four-category framework of scholarship (dis-

covery, integration, application, and teaching) will help the fellow identify opportunities for scholarly activity and translate professional activities into scholarship.³ Fellows should be able to apply Glassick's six standards for assessing scholarship: establishing clear goals, adequate preparation, appropriate methods, effective communication, reflective critique, and outstanding results.⁴

Development of Curriculum Vitae (CV) and Educator's Portfolio. Fellows should receive structured training in how to create a CV that includes an educator's portfolio.^{5,6} Beginning this process with an endpoint in mind, such as promotion criteria or election to an academy, encourages the fellow to recognize opportunities for scholarship as they arise, and to document productivity. Equally important is the inclusion of peer-reviewed publications and grants received for scholarly activity. Although CV and educator portfolio templates vary among institutions, a template that incorporates Boyer's definition of scholarship in teaching will produce a document that can be readily adapted to meet institutional requirements.

Navigating the Promotion and Tenure Process.

Understanding the basic structure of promotion and tenure processes in academic medical centers is essential for early career faculty. We suggest that learners become familiar with the policies and guidelines at their own institutions as well as with a few outside institutions to prepare them for the variability in standards. We recommend that aiming for a rigorous promotion and tenure process will be the most flexible option. Training for fellows on how to write referee letters will prepare them to do this in the future and will provide a window into the criteria used in the review of their own applications to the next academic rank.

Setting Short- and Long-term Career Goals. Goal-setting education can include strategies for setting both short- and long-term goals. The fellowship director can facilitate the fellow's development of expertise in a unique career focus within the curricular framework of the fellowship program. Structured reflection on skills and interests informs both near- and long-term goals, and a strategy for reevaluation at regular intervals must occur.

Finding a Mentor. The guidance of a mentor has a profound effect on career development. Effective mentorship for fellows begins with the dedicated fellowship director for overall guidance, but should include others to address specialized mentoring needs, such as research content focus and gender or lifestyle issues.^{7,8} Understanding how to find a mentor and how to promote an effective mentor-mentee relationship is a skill that is not necessarily intuitive. A dedicated fellowship director's primary focus is the development of the career of the fellow.

Being a Mentor. The benefits of the mentoring relationship are not limited to the protégé. Mentors can rekindle their passion for creativity and gain valuable assistance and allies. Productivity and career satisfaction for both parties improve as a direct result of the mentoring relationship.⁹⁻¹¹

Table 1
Suggested Education Scholarship Fellowship Core Content

<p>Career development</p> <ul style="list-style-type: none"> A. The scholarship of teaching B. Development of CV and educator's portfolio C. Navigating the promotion and tenure process D. Setting short- and long-term career goals E. Finding a mentor F. Being a mentor G. Leadership training (including collaborative skills, organization change, leadership styles) H. Negotiation techniques I. Time management skills (including strategies for securing protected time) <p>Theories of learning and teaching methods</p> <ul style="list-style-type: none"> A. Theories of learning (andragogy and pedagogy, learning styles, transfer of learning, emotional intelligence) B. Instructional systems design and curriculum development C. Clinical reasoning strategies (organizing knowledge, problem representations, illness and instance scripts, cognitive errors, script concordance testing) D. Developing expertise and deliberate practice E. Didactic teaching methods <ul style="list-style-type: none"> 1. Large-group methods (effective use of PowerPoint, lecture development, and presentation) 2. Small-group methods (team learning, problem-based learning, how to be an effective small group facilitator) 3. Techniques for integrating technology into didactics and increasing audience participation F. Clinical teaching methods <ul style="list-style-type: none"> 1. One-minute preceptor, SNAPPS, Aunt Minnie 2. Bedside and physical diagnosis teaching 3. Teaching procedural skills G. Role modeling and the hidden curriculum H. Simulation (scenario development and implementation, debriefing methods) I. Delivering effective feedback J. Difficult learners K. Learner assessment <p>Education research methods</p> <ul style="list-style-type: none"> A. Identifying research problems and questions B. Conceptual frameworks in medical education research C. Study design D. Ethics review process E. Qualitative methods for data analysis F. Quantitative methods for data analysis G. Survey research H. Assessment methods (instrument development, reliability and validity, psychometrics, item writing) I. Systematic review methods J. Presentation of results K. Scientific writing L. Conducting peer reviews M. Grantsmanship N. Critical appraisal of literature <p>Educational program administration</p> <ul style="list-style-type: none"> A. Undergraduate medical education B. Graduate medical education C. Continuing medical education D. Program evaluation <p>CV = curriculum vitae.</p>

G. Leadership Training. Fellowship graduates will be poised to assume leadership roles, and dedicated leadership and collaborative skills training should be included in training experience. Although medical fellowships have not traditionally incorporated leadership training, professional development programs are emerging that provide leaders with skills necessary to effectively engage others to accomplish a common task. Excellent references from the business literature and

popular press can be incorporated into the fellowship curriculum to prepare trainees to become effective leaders.^{12,13}

H. Negotiation Techniques. Most incoming fellows will not have had prior training in negotiation techniques, which is a necessary skill for navigating an academic path. Popular publications are used widely in business and human resource training and present an

approach that may be applied to academic negotiations.^{14–16}

Time Management Skills. Instruction on effective time management methods will help optimize fellows' satisfaction, efficiency, and success. Published resources highlight EM-specific tips to formal time-management systems.^{17,18}

Theories of Learning and Clinical Teaching

Learning Theory. Learning theory instruction provides the fellow with the ability to design and implement didactic and clinical teaching interventions and to develop theoretically sound, design-based education research.¹⁹ Important concepts in adult learning theory, with suggested resources, are:

- Theory of andragogy and adult learning principles.²⁰
- Dreyfus' stages of learning. Description of the novice, advanced beginner, competency, proficiency, and expertise stages of learning, with the teaching style, learning steps, and learner characteristics of each stage.²¹
- Bloom's taxonomy of learning domains. Definition of cognitive, affective, and psychomotor domains and the sublevels of each.²²
- Miller's pyramid of trainee ability. Description of "knows," "knows how," "shows how," and "does" stages of ability.²¹
- Cognitive development theory and Perry's categories of "knowing"—procedural knowing, dualistic knowing, multiplicitic knowing, reflective knowing.²³
- Bandura's social learning theory and the concepts of modeling and observational learning.²⁴
- Kolb's theory of experiential learning. Familiarity with the four elements of the Experiential Learning Model.²⁵
- Design-based paradigm of research and learning.¹⁹
- Constructivism. Constructivist description of the role of the instructor, role of the learner, collaboration, and the nature of the learning process.²⁶
- Common learning style inventories, such as Fleming and Mills' VARK questionnaire and Kolb's inventory of learning styles.²⁵
- Kirkpatrick's model of evaluation. Four levels of learner evaluation and the pursuit of each in research and curriculum design.²⁷
- Situated learning model, including cognitive apprenticeship, modeling, scaffolding, reflection, and deliberate practice.²³

Instructional Systems Design and Curriculum Development. Learners should be trained to develop educational content using structured formal methods.^{28–30} Kern et al.³¹ describe a six-step process of curriculum development that is widely used and includes the following steps: 1) problem identification and general needs assessment, 2) targeted needs assessment of the learners, 3) educational goals and objectives, 4) instructional strategies, 5) implementation, and 6) evaluation and feedback. The fellowship curriculum should include both didactic instruction on curriculum development methods and practical application with feedback from a

dedicated mentor. This portion of the fellowship curriculum is easy to customize to the fellow's intended content focus for his or her career.

Clinical Reasoning Strategies. Graduating fellows should have knowledge of the key elements of the diagnostic reasoning process, including acquiring data, organizing knowledge, developing an accurate problem representation, searching for and selecting illness and instance scripts, and arriving at a diagnosis.^{32–34} They should know the strengths and limitations of available methods of assessing diagnostic reasoning in learners, including written examinations, key feature problems, script concordance tests, virtual patients and simulation, oral examinations, direct observation, and retrospective case analysis.³⁵ Finally, fellows should have specific instruction regarding the types of cognitive errors physicians make and be able to teach strategies to avoid them.^{36–38}

Developing Expertise and Deliberate Practice.

Studying learners in a variety of fields and disciplines has informed current theory on the acquisition of expertise, and learners should be familiar with the key principles of deliberate practice.³⁹

Didactic Teaching Methods. Because fellows will be expected to be expert educators, they should understand and practice the principles of both large-group and small-group teaching methods. There are nuances to these practices depending on the target audience (e.g., undergraduate, graduate, or continuing medical education [CME] learners).

Large-group Methods

Large-group lectures provide the most efficient means for an educator to deliver knowledge and concepts to a large group of learners. Its effectiveness is closely linked to the educator's skills in 1) composing the content and storyboard⁴⁰; 2) designing the slides^{41–43}; 3) presenting the content in an engaging manner^{40,44}; and 4) techniques for incorporating active learning such as buzz groups, think-pair-share, and audience response systems.⁴⁵

Small-group Methods

Discussions in a small-group setting are an effective means to promote and facilitate critical thinking. At its core is the interaction between educator (as a facilitator), learner, and learning task.^{46–48} Fellows should have mentored practice facilitating problem-based learning exercises and designing team-based learning modules that are challenging and learner-centered.^{47,49–51}

Clinical Teaching Methods. Fellows should receive instruction on established clinical teaching methods. Familiarity with the medical education literature provides a foundation to build upon as fellows embark on a path of lifelong learning. We include a brief review of some of the major clinical teaching methods:

One-minute Preceptor, SNAPPS, and Aunt Minnie

- There are several published approaches to clinical teaching that are well-suited to the emergency department. The 1-minute preceptor, or "microskills" method, consists of a stepwise progression of preceptor-driven

and learner-centered questions to guide the learner as he or she presents a patient to the preceptor. The model is designed to maximize learning points during any clinical presentation, including those that are time-limited.⁵²

- The SNAPPS mnemonic is a model for case presentation that is both learner-centered and learner-driven and is intended to help the learner deliver a thorough and high-yield case presentation while promoting clinical reasoning and learner-generated questions about the case.⁵³

- “Aunt Minnie” refers to a clinical teaching method for learning about disease presentations based on pattern recognition.⁵⁴ After the case presentation, the learner should be asked to summarize the chief complaint and to give the likely diagnosis. The preceptor should be able to quickly confirm or refute this diagnosis.

Bedside Teaching

Teaching at the bedside allows educators to directly observe clinical skills and professionalism, improve patient care, and enhance learning of patients and trainees.⁵⁵ Several characteristics of excellent bedside teachers have been identified (e.g., being enthusiastic, knowledgeable, approachable, and possessing excellent communication skills) and strategies for promoting effective bedside teaching have been published.^{56–58}

Teaching Procedural Skills

Procedures are an integral component of the practice of EM, and fellows should understand how to apply psychomotor education theory and take a structured approach to procedural skills training.^{59–63} Fellows should be prepared to develop procedural curricula, to apply a framework for procedural skills training to a variety of settings (including the bedside, procedural skills lab, or simulation), and to assess procedural competence.

G. Role Modeling and the Hidden Curriculum. As future medical education leaders, fellows will likely interact with a great number of learners. Their behaviors and attitudes serve as a model to learners, and care must be taken to ensure fellows minimize the unintentional, potentially detrimental instruction they might provide future learners.⁶⁴

H. Simulation (Scenario Development and Implementation and Debriefing Methods). Simulation is an effective modality for teaching medical knowledge and decision-making, teamwork, interdisciplinary communication, and procedural skills.^{65–68} Fellows should receive training on how to discern what educational content is appropriate for teaching using simulation and how to design and implement scenarios. Fellows should have an understanding of key scenario design factors (e.g., maintenance of fidelity, clear goals and objectives, using visual aids and multiple instructional strategies, standardizing delivery, and providing opportunities for individual and team assessment) and be able to demonstrate how to successfully debrief simulation sessions.^{69–71}

Delivering Effective Feedback. Feedback is crucial to medical education and can be defined as an objective appraisal of performance that aims to improve future

performance.⁷² Education scholarship fellows should receive and provide training on how to give feedback effectively, including written, oral, public, private, peer-to-peer, or cross hierarchy feedback.^{73,74}

J. Difficult Learners. Educators will encounter learners who perform below their potential due to specific difficulties or unique learner needs. Fellows should be able to identify a difficult learner, describe the learner’s needs and difficulties, and apply strategies to help that learner overcome these difficulties and achieve their potential.^{75–79}

K. Learner Assessment. Developing familiarity with different methods of learner assessment and key research priorities in this field is a crucial component of fellows’ training. Whether they pursue curriculum development, research, or educational leadership activities, they will need to assess learner performance. The proceedings articles from the breakout session on learner assessment from this consensus conference, as well as a key textbook, provide a broad overview of current practice and define the research priorities in this area.^{80,81}

Education Research Methods

Table 1 highlights the specific education research skills graduates will need to acquire to produce theory-based, programmatic, and clarifying research that moves the field of health professions education forward.⁸² Recently published primers present general tips for getting started in research, describe applicable study designs, and list useful references for a variety of research techniques.^{83,84} Fellows should have knowledge of fundamental study designs in epidemiology, as well as designs that are unique to education research and offer specific advantages in the applied discipline of medical education.⁸⁵ Additionally, fellows should be trained to design studies that have meaningful outcomes and engage in collaborative efforts that build on the major trends and themes within the field to create community-wide improvements.^{86,87}

Fellowship graduates should demonstrate the ability to identify a research problem and define a research question and consider the conceptual framework that will be used to frame the question.⁸⁸ They should be familiar with navigating an institutional review board process, including understanding ethical issues that are specific to education research.^{89,90} Fellows should be trained to select methods that are appropriate for the research question and be familiar with quantitative and qualitative methods, instrument development and assessment methods, and methods for performing a systematic review.

Future education scholars should also have training in effectively presenting results, both orally and in writing. Resources for grammar, style, and scientific writing may be a useful addition to the fellowship curriculum.^{91–93} Finally, the curriculum should prepare the scholar to critically appraise the literature, perform a peer review, and successfully develop a grant application.

Educational Program Administration

As future leaders in educational programs, fellows should be equipped with skills necessary to administer

and evaluate an educational program and to advise and assess trainees in a way that accurately reflect their abilities and fosters their academic development. The consensus group identified three organizational structures within academic EM departments that will support this type of growth.

Undergraduate Medical Education. The majority of Accreditation Council for Graduate Medical Education (ACGME)-accredited EM residency programs have associated clerkships for senior medical students.⁹⁴ Clerkships typically last between 3 and 4 weeks and are conducted throughout the academic year, allowing for interaction with a large number of students. Clerkship administration provides an ideal interface between fellows and medical students, many of whom have a serious interest in pursuing EM as a career.

At least one existing education fellowship has fellows act as assistant clerkship directors. In addition to creating a natural forum for small-group teaching and student advising, this role prepares fellows to participate in the residency selection process and to hone assessment skills by completing clerkship evaluations and standardized letters of recommendation. Mentoring students can also broaden the fellows' network of collaborators as they engage in research and educational projects with other departments and institutions.

Graduate Medical Education. In some existing fellowships, fellows function as assistant program directors, which provides a natural stepping stone for those who seek residency directorship as a career goal. These experiences also provide a direct view to the "inner workings" of a residency program and academic department. As EM residency programs prepare for the ACGME Next Accreditation System in 2013, and as program evaluation transitions from an episodic to an increasingly continuous process, education fellows are likely to play an integral role by gathering data on individual residents' progress through the educational milestones and in helping programs lay out their plans for maintenance of accreditation and educational growth.⁹⁵

CME. Participation in CME programs provides fellows with opportunities for scholarship and an avenue for developing areas of expertise within EM core content. Opportunities for speaking at outside departments and institutions or through distance or Web-based programs allow fellows to hone their lecturing skills and develop name recognition outside of their departments. The development of new CME programs also provides opportunity for curriculum innovation and dissemination.

Program Evaluation. Learning how to evaluate educational programs is also crucial for education scholars. Skills learned in the curriculum development component of the curriculum can be applied to evaluate and revise programs of study. In addition, many fellows will participate in leadership roles in specific undergraduate, graduate, or continuing medical education programs and will have the opportunity to learn accreditation and certification requirements for those individual programs.

The goal of education scholarship fellowships is to create well-rounded academicians who can thrive in leadership positions within academic departments or organizations. The experiences relating to advisorship, individual- and program-level assessment, administrative leadership, and dissemination of knowledge afforded by acting in the roles described above provide a means by which fellows can position themselves to take on leadership roles at any organizational level.

SUMMARY

The core content of an EM education scholarship fellowship should include formal instruction in career development, adult learning theory and teaching methods, education research methods, and educational program administration. This proposed content outline may be adapted for use in education scholarship fellowships in other disciplines or focused education fellowships.

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