January 10, 2013

Dear CORD Academy for Scholarship in Education Selection Committee,

Please accept my application for the CORD Academy for Scholarship in Education in Emergency Medicine's Distinguished Educator Award. I am applying in the category of Education Research. I believe that the quality, quantity, and breadth of my education research contributions matches the standard setting examples provided, and most closely matches Example 4, MD in a clinical setting.

My personal goals as an education researcher have been to design and conduct high quality education research, to serve the research community in review and editorial activities, and to promote professional development in education research in Emergency Medicine and the broader medical education community. My formal training in a 2-year Education Research Fellowship and a Masters in Clinical Research program with a focus in Education Research has prepared me to achieve these goals. Furthermore, I continually seek feedback from my peers and mentors to improve my skills and practice, and continue to reflect on ways to incorporate this feedback in order to make more meaningful contributions to our field.

Please find attached my application materials, including the match to standard setting example, structured summary, personal statement, structured abstract, and letters of support. As quantity, quality, breadth, and evidence of peer review can be demonstrated in the structured abstract for this category, I felt that the strongest evidence of my effectiveness in my research activities for the Appendices would come in the form of letters of support from those who have supervised me, collaborated with me, and have been mentored by me. Therefore, I have included only letters in my appendices.

Reviewing these letters has allowed for further reflection, and I have appreciated the learning opportunity that compiling this application has provided. I would be honored to join the CORD Academy, and would look forward to serving CORD, and working with the Academy to further promote excellence in EM education.

Sincerely,

[redacted]
Co-Chief, Education Section
Director, Emergency Medicine Residency Program
Co-Director, Education

[redacted], MD, MCR

(MD in a Clinical Department)

Educational Research Portfolio

Match to standard-setting example(s): In column 1 check 1 or 2 of the standard-setting examples (which are found on the introductory page of materials of this category). Determine which you believe best matches the type of enduring materials you do and have included in your mini-portfolio. In column 2, briefly identify major similarities and differences in the type of enduring materials between your mini-portfolio and the example(s)	
Example 1 - PhD in Clinical Department Example 2 - MD in Basic Science Department Example 3 - PhD in Basic Science Department ☑ Example 4 - MD in Clinical Department	*Like the standard setting example 4, I have published original research contributions that span several medical education themes. I have also served as a journal reviewer. However, I have also dedicated a portion of my career to education research service in my role as Associate Editor for two journals, and this allows me both to further my own education research skills and help promote excellence in medical education research. In addition, I am devoted to professional development efforts, and have worked to advance our field and support education researchers by speaking nationally and publishing papers about education research methods, directing an Education Research fellowship, Co-Chairing the 2012 AEM consensus conference on Education Research in EM, and mentoring others in education research efforts, both at my home institutional and nationally.*

Structured Summary: Personal Statement	
Personal Goals	• To design and conduct meaningful, high quality education research • To serve the research community as a journal editor, abstract/manuscript/grant reviewer, and educator about research methods • To promote professional development in education research in EM and beyond
Personal Preparation	• Completed a 2-year fellowship in EM Education Research • Attained an MCR (Masters in Clinical Research with a focus in Education Research)
Personal Reflection/Process for Improvement	• As a journal editor for education research submissions, I constantly offer authors suggestions about how to improve their research, and always am mindful of how I can apply lessons learned to my own work • I regular seek feedback from peers and supervisors about how I can improve my performance, and incorporate suggestions in order to meet my long term goals as an education researcher

Research Efforts
Theme: Feedback in Medical Education 1. What are baseline perceptions of EM residents and faculty regarding real-time feedback in the Emergency Department? 2. What is the effect of an educational intervention designed to improve real-time feedback in the Emergency Department?
Theme: Residency Selection and Match Ethics 1. How common is the practice of offering interviews prior to the release of the dean's letter (MSPE)? 2. What factors do applicants value in selecting an Emergency Medicine Residency Program? 3. What elements of the interview day experience impact the rank order list of applicants? 4. What are Emergency Medicine residency applicants' perceptions regarding being contacted after the interview day?
Theme: Promoting Scholarship in Medical Education 1. What frameworks can early career education researchers apply to approach educational problems with well-designed studies? 2. What conceptual framework supports fellowship training in Education Scholarship, and what are best practice approaches towards needs assessment, curriculum development, and core content for this professional development training? 3. Is it feasible to implement an Education Research Fellowship in an academic Emergency Medicine Department?
Theme: Evaluating Diagnostic Reasoning in Learners 1. Can a vignette-based instrument designed to encourage either pattern recognition or analytic reasoning improve the assessment of trainees' diagnostic skill? 2. Is an online tool designed to assess knowledge of pediatric respiratory emergencies feasible to implement in a learner population, and will pilot testing demonstrate validity evidence to support its use?
Contributions to the Dissemination of the Research Results of Other Investigators
1. Lead author on proposal and Co-Chair, 2012 Academic Emergency Medicine Consensus Conference on Education Research in Emergency Medicine 2. Associate Editor, *Academic Emergency Medicine* and *Journal of Graduate Medical Education* 3. Fellowship Director, OHSU Department of Emergency Education Research Fellowship

Discussion of Breadth
I am engaged in promoting education research in EM at many levels, including: Producing my own research on a variety of topics; Mentoring others locally and national in research efforts; Accepting speaking engagements and publishing papers on education research methods; Serving as a reviewer for education abstracts, manuscripts, and grants; Serving as an Associate Editor for two journals; Directing an Education Research Fellowship; and collaborating with regional and national experts in order to promote excellence in medical education research.

Personal Statement

Although my roles as a clinician, educator, and leader all bring me immense career satisfaction, I feel my greatest contribution to academic Emergency Medicine has been my dedication towards advancing education research in our field. I love the philosophy and practice of Emergency Medicine, and education research combines my love of patient care and passion for education by promoting the development and validation of new teaching instruments, interventions, curricula, and programs to improve clinician performance, and ultimately patient outcomes. I developed a niche in education research by designing, instituting, and completing a 2-year fellowship in Education Research in Emergency Medicine at [redacted], successfully defending my thesis on Feedback in Medical Education to earn a Masters in Clinical Research with a focus in Education Research. Since that time, I have aimed to implement my aspirations to advance education research in Emergency medicine by 1) designing and conducting meaningful, high quality education research; 2) Serving the research community as a journal editor, reviewer of abstracts, manuscripts, and grants, and engaging in efforts to educate others about education research methods; and 3) Promoting professional development in education research in EM and beyond. I have helped define the distinctiveness of emergency medicine education studying topics crucial to medical educators that are uniquely suited to investigation in the setting of the ED, such as real-time feedback and diagnostic reasoning. Furthermore, I have led professional development opportunities for education researchers in Emergency Medicine that have not been described in other fields, such as the development and implementation of an Education Research fellowship and coordinating a Consensus Conference on Education Research. These efforts have been shared with the medical education community in peer-reviewed publications, and are a step towards defining Emergency Medicine educators as distinct contributors to the education research community.

My research interests include evaluating the effectiveness of clinical teaching interventions, residency selection methods and ethics, patient satisfaction, and evaluating diagnostic reasoning strategies in learners. I have a specific interest in educating learners to solicit, and educators to provide effective feedback in medical education and have delivered invited lectures at multiple national and international meetings on feedback. Using formal curriculum development methods, I created a curriculum designed to improve real-time feedback in the Emergency Department, and conducted two multicenter studies: a baseline assessment of resident and attending satisfaction with feedback in the ED, and a cluster-randomized trial of a feedback curriculum designed to improve learner and educator satisfaction with feedback. These studies were presented at each regional and at the national Society for Academic Emergency Medicine meetings, and this work earned the honors of being selected as a plenary session paper (2009 SAEM Western Regional Research Forum), being named Best Poster Presentation (2009 SAEM Mid-Atlantic Research Forum) and being presented as one of the most influential education research papers in Emergency Medicine at the 2010 Council of Residency Directors in Emergency Medicine meeting. Both papers have been published in *Academic Emergency Medicine.*

In addition to producing my own research, I am also dedicated to improving the quality of education research in Emergency Medicine. Some examples of efforts I have engaged in to promote quality EM research include: 1) Creating a pilot research consortium of Emergency Medicine educators, the Emergency Medicine Education Research Group (EMERGe); 2) Serving on a 5-member steering committee of CORD-EM to develop the annual CORD-EM Education Research Grant, which is now reviewing the 3rd cycle of applications; 3) Participating in multiple national workshops and authoring several papers on education research methods; and 4) In 2013, accepting an invitation to serve as a faculty mentor for the AAMC Medical Education Research Certificate program for faculty development in Emergency Medicine.
However, my most significant contribution to advancing the science of education in Emergency Medicine has been my work as co-chair of the 2012 Academic Emergency Medicine's annual Consensus Conference. This conference occurs annually and addresses a timely, relevant topic in Emergency Medicine, with the goal of developing a coordinated research agenda for the area of interest to direct research efforts in the next decade. Although this conference traditionally focuses on clinical research topics, as I graduated from fellowship I

began to develop a vision for a consensus conference that would focus on Education Research in Emergency Medicine. Working with a small steering committee of colleagues at OHSU and nationally, I co-wrote a proposal that was accepted in 2010 for the 2012 conference, which was held May 2012 in Chicago. As conference co-chair, my tasks involved developing the conference curriculum, recruiting national and international experts, and working to plan the consensus-building sessions. The proceedings papers from this conference were published in the December 2012 issue of *Academic Emergency Medicine*.
My reviewer activities have included reviewing education research abstracts for the Council of Residency Directors in Emergency Medicine and the Society for Academic Emergency Medicine. I have also served as a reviewer for *Academic Emergency Medicine, Journal of Graduate Medical Education, and Western Journal of Emergency Medicine*, was recognized as an Outstanding Reviewer for *Academic Emergency Medicine* in 2012. I currently serve as an Associate Editor for both *Academic Emergency Medicine* and the *Journal of Graduate Medical Education.*

Although education research in Emergency Medicine is a young science, I am excited about the collaboration and momentum that is building in our field. I feel fortunate to have received a depth of training in both education and research methods that is uncommon among academic Emergency Physicians, and have benefitted from myriad opportunities that have resulted from excellent mentors in my department, other OHSU departments, and the national EM community. I feel a sense of responsibility to use this training to advance our field, and would be honored to join the CORD Academy for Scholarship in Education in Emergency Medicine as one avenue to continue to promote excellence in Emergency Medicine education.

STRUCTURED ABSTRACT

Theme: Feedback in Medical Education

Research Question 1. What are baseline perceptions of EM residents and faculty regarding real-time feedback in the Emergency Department?

Investigation: The focus of this study was to examine perceptions of the educational feedback that attending physicians give to residents in the clinical environment of the emergency department (ED). We compared attending and resident satisfaction with real-time feedback and hypothesized that the two groups would report different overall satisfaction with the feedback they currently give and receive in the ED.

Methods: This observational study surveyed attending and resident physicians at 17 EM residency programs through web-based surveys. The primary outcome was overall satisfaction with feedback in the ED, ranked on a 10-point scale. Additional survey items addressed specific aspects of feedback. Responses were compared using a linear generalized estimating equation (GEE) model for overall satisfaction, a logistic GEE model for dichotomized responses, and an ordinal logistic GEE model for ordinal responses.

Results & Impact of Findings: Three hundred seventy-three of 525 (71%) attending physicians and 356 of 596 (60%) residents completed the survey. Attending physicians were more satisfied with overall feedback (mean score 5.97 vs. 5.29, $p < 0.001$) and with timeliness of feedback (odds ratio [OR] = 1.56, 95% confidence interval [CI] = 1.23 to 2.00; $p < 0.001$) than residents. Attending physicians were also more likely to rate the quality of feedback as very good or excellent for positive feedback, constructive feedback, feedback on procedures, documentation, management of ED flow, and evidence-based decision-making. Attending physicians reported time constraints as the top obstacle to giving feedback and were more likely than residents to report that feedback is usually attending initiated (OR = 7.09, 95% CI = 3.53 to 14.31; $p < 0.001$).Attending physician satisfaction with the quality, timeliness, and frequency of feedback given is higher than resident physician satisfaction with feedback received. Attending and resident physicians have differing perceptions of who initiates feedback and how long it takes to provide effective feedback. Knowledge of these differences in perceptions about feedback may be used to direct future educational efforts to improve feedback in the ED.

Contributorship/Role: Primary Investigator in the study and first author on the manuscript.

Dissemination 1: Presented at SAEM Regional Meetings: Western (Orange County, CA,3/28-29/08), New York (New York, NW, 4/30/08), Southeastern (3/14-15/08, Louisville, KY), New England (4/30/08, Shrewbury, MA).

Dissemination 2:

Poster Presentation at SAEM Annual Meeting, May 2008

Dissemination 3:

Yarris LM, Linden JA, Hern HG, Lefebvre C, Nestler DM, Fu R, Choo E, Brunett P. Attending and Resident Satisfaction with Feedback in the Emergency Department. *Acad Emerg Med.* 2009. 16(s2): S76-S81.

Research Question 2. What is the effect of an educational intervention designed to improve real-time feedback in the Emergency Department?
Investigation: This study tested the hypothesis that an educational intervention related to feedback would improve emergency medicine (EM) faculty and resident physician satisfaction with feedback.
Methods: This was a cluster-randomized, controlled study of 15 EM residency programs in 2007–2008. An educational intervention was created that combined a feedback curriculum with a card system designed to promote timely, effective feedback. Sites were randomized either to receive the intervention or to continue their current feedback method. All participants completed a Web-based survey before and after the intervention period. The primary outcome was overall feedback satisfaction on a 10-point scale. Additional items addressed specific aspects of feedback. Responses were compared using a generalized estimating equations model, adjusting for confounders and baseline differences between groups. The study was designed to achieve at least 80% power to detect a one-point difference in overall satisfaction ($\alpha = 0.05$).
Results & Impact of Findings: Response rates for pre- and postintervention surveys were 65.9 and 47.3% (faculty) and 64.7 and 56.9% (residents). Residents in the intervention group reported a mean overall increase in feedback satisfaction scores compared to those in the control group (mean increase 0.96 points, standard error [SE] ± 0.44, $p = 0.03$) and significantly higher satisfaction with the quality, amount, and timeliness of feedback. There were no significant differences in mean scores for overall and specific aspects of satisfaction between the faculty physician intervention and control groups. An intervention designed to improve real-time feedback in the ED resulted in higher resident satisfaction with feedback received, but did not affect faculty satisfaction with the feedback given.
Contributorship: Study PI, First author on publication
Dissemination 1: Presented at SAEM Regional Meetings: Western (Jan 09, ***plenary session paper***), Mid-Atlantic (March 09, oral presentation), Southeast (March 09, ***Winner Best Poster Presentation***), Northeastern (March 09, poster presentation)
Dissemination 2: Poster Presentation at SAEM Annual Meeting, May 2008
Dissemination 3: **Yarris LM,** Fu R, LaMantia J, Linden JA, Hern HG, Lefebvre C, Nestler D, Tupesis J, Kman N. Effect of an Educational Intervention on Faculty and Resident Satisfaction with Real-time Feedback in the Emergency Department *Acad Emerg Med* 2011; 18(5)504-512

Theme: Residency Selection and Match Ethics

Research Question 1. How common is the practice of offering interviews prior to the release of the dean's letter (MSPE)?
Investigation: In the application process for Emergency Medicine (EM) residencies, the tacit start date for offering interviews has been November 1, the day the Medical Student Performance Evaluations (MSPEs) are released. We hypothesized that even before November 1, a large number of our applicants had already received "early" invitations to interview this year.

Methods: We anonymously surveyed our program's EM interviewees with a survey that included two questions: "Did you receive any interview invitations before November 1?" and "Please list the programs that offered you interview invitations before November 1."
Results & Impact of Findings: Of 82 interviewees, 73 completed the survey (89%). Seventy-seven percent of respondents (56/73) were offered an interview before November 1. At least 59 of the 135 (44%) EM residencies send early invitations. The majority of our interviewees did receive early invitations. It cannot be ignored that at least 59 programs offer early invitations. This information has implications both for student advisors and residency programs.
Contributorship: Study Co-PI, second author on publication
Dissemination 1: Poster presentation: Council of Residency Directors, Emergency Medicine, Annual Meeting. March 2006.
Dissemination 3: DeIorio NM, **Yarris LM,** Kalbfleisch N. Early invitations: the exception or the norm? *J Emerg Med*, 2007. 33(1): 77-79.

Research Question 2. What factors do applicants value in selecting an Emergency Medicine Residency Program?
Investigation: Little is known about the factors important to applicants when selecting an emergency medicine residency. We sought to identify which residency-specific criteria applicants value in selecting a training program.
Methods: We conducted an anonymous survey of emergency medicine interviewees at our residency. Applicants were asked to rate each of 18 factors on a four-point scale from 1 ("not at all important") to 4 ("very important") in their selection of a residency.Results & Impact of Findings: Of 82 interviewees, 73 (89%) completed the survey. The factors with the top six mean scores were: how happy the residents seemed (3.9), program personality (3.8), faculty enthusiasm (3.7), geographic location (3.6), experience during interview day (3.5), and pediatrics training (3.5). The top three factors deemed most important to emergency medicine applicants are primarily intangibles, while programs have no control over the fourth most important factor, location.
Contributorship: Study co-PI. First author on manuscript.
Dissemination 1: Presented as a mini-oral presentation at the SAEM Western Regional Research Forum, March 2007.
Dissemination 2: Yarris LM, DeIorio NM, Lowe RA. Factors Applicants Value When Selecting an Emergency Medicine Residency Program. Western J of Emerg Med. 2009. 10(3): 159-162

Research Question 3. What elements of the interview day experience impact the rank order list of applicants?
Investigation: Emergency medicine (EM) residency programs spend significant time and money offering an interview day experience for their applicants. The day may include a range of activities, although which are most important from the applicants' point of view are not known.
Methods: An anonymous web-based survey was sent to all applicants to an EM residency program from the 2006/07 cycle. The study assessed factors about the interview day that

were most helpful to applicants in assessing goodness of fit and preparing their rank list of programs.
Results & Impact of Findings: When considering whether a program was a good fit for them, the respondents chose (from most to least important) how happy the residents seem, faculty–resident relationships, how well the residents work together, resident and faculty values match my own, the residents spend time together outside of the residency, and the residents share my outside interests.Applicants most value assessing program "personality," informal off-campus gatherings with residents, and interviewing with the program director as ways to decide where a program will reside on their rank list. Touring off-campus emergency departments and off-service facilities received the lowest rating averages. Residency programs have the opportunity to control two of the three most important ways in which applicants use the interview day to assess programs by offering off-campus gatherings with residents and ensuring that every candidate interviews with the program director. Residency programs may use this knowledge to optimize interview day resources.
Contributorship: Study co-PI. Second author on the manuscript.
Dissemination 1: DeIorio NM, **Yarris LM**, Gaines SA. Emergency Medicine Residency Applicant Views on the Interview Day Process. *Acad Emerg Med.* 2009. 16(s2): S67-S70.

Research Question 4. What are Emergency Medicine residency applicants' perceptions regarding being contacted after the interview day?
Investigation: We sought to characterize the experiences and preferences of applicants to emergency medicine (EM) residency programs about being contacted by programs after their interview day but before the rank list submission deadline.
Methods: This cross-sectional study surveyed all applicants to an academic EM residency during the 2006–2007 interview cycle. Participation was anonymous and voluntary. We used a Web-based survey software program to administer the survey in February 2007, after rank lists were submitted. Two additional invitations to participate were sent over the next month. The instrument contained multiple-choice and free-text items. This study was submitted to our Institutional Review Board and was exempt from formal review.
Results & Impact of Findings: 240/706 (34%) of applicants completed the survey. 89% (214/240) of respondents reported being contacted by a residency program after their interview but before rank lists were due. Of those contacted, 91% report being contacted by e-mail; 67% by mail; and 55% by phone. 51% of subjects reported that being contacted changed the order of their rank list in at least one case. A majority of contacted applicants felt "happy" (58%) or "excited" (56%) about being contacted, but significant numbers reported feeling "put on the spot" (21%) or "uncomfortable" (17%).A majority felt that it is appropriate for programs to contact applicants after interview day but before the rank lists are submitted, but 39% of contacted subjects responded that contact by phone is either "always inappropriate" or "usually inappropriate." Regarding perceptions regarding the rules of the match, 80% (165/206) of respondents felt it was appropriate to tell programs where they would be ranked, and 41% (85/206) felt it was appropriate for programs to notify applicants of their place on the program's rank list. Most EM residency applicants report being contacted by programs after the interview day but before rank lists are submitted. Although applicants feel this practice is appropriate in

general, over a third of subjects feel that contact by phone is inappropriate. These findings suggest that residency programs can expect a majority of their applicants to be contacted after an interview at another program, and shed light on how applicants perceive this practice.
Contributorship: Study co-PI. First author on manuscript.
Dissemination 1: Poster presentation, American College of Emergency Physicians Scientific Assembly, October 9th, 2007
Dissemination 2: **Yarris LM,** DeIorio NM, Gaines S. Emergency Medicine Residency Applicants' Perceptions About Being Contacted After Interview Day. *West J Emerg Med* 2010; 11(5)474-478

Theme: Promoting Scholarship in Medical Education

Research Question 1. What frameworks can early career education researchers apply to approach educational problems with well-designed studies, and what are the current research priorities for EM education research?
Methods & Impact: Early career EM education researchers may struggle when attempting to answer educational problems with research. Most of what is done in medical education is based on theory and tradition rather than scientific evidence. In order to promote quality research in education, I have authored several papers that attempt to provide early career education researchers with an approach to overcoming barriers they face in producing scholarship. Of the three publications below, the first is a research primer, providing both basic elements of education research design as well as resources for further study. The second is a broad overview of the top priorities for education research in EM in the next decade. The third is a methods paper, providing both tips for success in education scholarship, and examples of effective study design that can be applied to the type of research questions EM educators face. In addition, I have participated in several workshops intended to provide professional development for education researchers, as outlined below.
Contributorship: varies, see below.
Relevant Publications:
1. Yarris LM, Deiorio NM. Education Research: A Primer for Educators in Emergency Medicine. *Acad Emerg Med* 2011; 18:S27-35.
2. LaMantia J, Deiorio NM, **Yarris LM.** Executive Summary. Education Research in Emergency Medicine: Opportunities, Challenges, and Strategies for Success. *Academic Emergency Medicine* 2012*;* 19*:* 1319–1322
Dissemination 3:
3. Yarris LM, Gruppen LD, Hamstra SJ, Ericsson KA, Cook DA. Overcoming Barriers to Addressing Education Problems with Research Design: A Panel Discussion. *Academic Emergency Medicine* 2012*;* 19*:* 1344–1349
Relevant National Presentations:
1. Yarris LM. Education Research: Building a Career. American College of Emergency Physicians Scientific Assembly Research Forum Invited Luncheon Panel Discussion, with Lynne Richardson and Daniel Spaite. October 9, 2012. Denver, CO.
2. Yarris LM, Sullivan G, Simpson D, Sargeant J, Philibert I, Opas L, Lypson M, DeRosa D, Chretien K, ten Cate TJ, Artino A. The Personal Trainer Approach to Writing

for Education Journals: Ready, Set, Go. AAMC/GEA Sponsored Workshop, Nov 5, 2012, San Francisco, CA
3. **Yarris LM,** Gruppen LD, Hamstra SJ, Ericsson KA, Cook DA. Overcoming Barriers to Addressing Education Problems with Research Design: A Panel Discussion. Didactic Presentation, Academic Emergency Medicine Consensus Conference. May 9, 2012. Chicago, Ill.
4. Yarris LM, Choo EC, DeIorio NM. Designing Great Education Research Saturday, June 4th, 2011 Didactic workshop at SAEM Annual Meeting, Boston, MA.
5. Yarris LM, DeIorio NM. Education Research Brown Bag. Council of Residency Directors in Emergency Medicine Academic Assembly, San Diego, CA March 4, 2011.
6. **Yarris LM,** DeIorio NM. Pearls and Pitfalls in Education Research Design, Implementation and Publication. Council of Residency Directors in Emergency Medicine Academic Assembly, San Diego, CA March 4, 2011.
Research Question 2. What conceptual framework supports fellowship training in Education Scholarship, and what are best practice approaches towards needs assessment, curriculum development, and core content for this professional development training?
Research Question 3. Is it feasible to implement an Education Research Fellowship in an academic Emergency Medicine Department?
Investigation, Methods & Impact: Having developed a hypothesis that a post-graduate training experience formatted similar to the ACGME-accredited fellowships would develop leaders in medical education, I developed and implemented an Education Fellowship at OHSU in 2005, with both an Education and Education Research track. Since then, I have contributed to several publications on this topic, ranging from defining an overall curriculum for an Education Scholarship Fellowship, describing a specific core content, outlining the logical next step needs assessment, and describing the combined experiences of our education fellowship, and a similar fellowship at another institution. I also co-chaired a breakout session on the topic of education fellowships at the 2012 AEM Consensus conference. Relevant publications and presentations as below.
Contributorship: As below.
Relevant Publications:
1. Coates WC, Lin M, Clarke S, Jordan J, Guth T, Santen SA, **Yarris LM.** Defining A Core Curriculum for Education Scholarship Fellowships in Emergency Medicine *Academic Emergency Medicine* 2012*;* 19*:* 1411–1418
2. Lin M, Santen SA, **Yarris LM,** Mullan P, Searle N, Rougas S, Coates WC. Development of a Training Needs Assessment for an Education Scholarship Fellowship in Emergency Medicine. *Academic Emergency Medicine* 2012*;* 19*:* 1419–1424
3. **Yarris LM**, Coates WC, Lin M, Lind K, Jordan J, Clarke S, Guth TA, Santen SA, Hamstra SJ. Consensus Proceedings: A Suggested Core Content for Education Scholarship Fellowships in Emergency Medicine. *Academic Emergency Medicine* 2012*;* 19*:* 1425–1433
4. Yarris LM, Coates WC. Creating Educational Leaders: Experiences with Two Education Fellowships in Emergency Medicine. *Academic Emergency Medicine* 2012*;* 19*:* 1481–1485

Relevant Presentations:
1. Coates WC, Lin M, Yarris LM. Defining A Core Curriculum for Education Scholarship Fellowships in Emergency Medicine. Breakout Session, Academic Emergency Medicine Consensus Conference. May 9, 2012. Chicago, Ill.

Theme: Evaluating Diagnostic Reasoning in Learners

Research Question 1: Can a vignette-based instrument designed to encourage either pattern recognition or analytic reasoning improve the assessment of trainees' diagnostic skill?
Investigation: Research in cognition has yielded considerable understanding of the diagnostic reasoning process and its evolution during clinical training. This study sought to determine whether or not this literature could be used to improve the assessment of trainees' diagnostic skill by manipulating testing conditions that encourage different modes of reasoning**.**
Methods: We developed an online, vignette-based instrument with two sets of testing instructions. The "first impression" condition encouraged nonanalytic responses while the "directed search" condition prompted structured analytic responses. Subjects encountered six cases under the first impression condition and then six cases under the directed search condition. Each condition had three straightforward (simple) and three ambiguous (complex) cases. Subjects were stratified by clinical experience: novice (third- and fourth-year medical students), intermediate (postgraduate year [PGY] 1 and 2 residents), and experienced (PGY 3 residents and faculty). Two investigators scored the exams independently. Mean diagnostic accuracies were calculated for each group. Differences in diagnostic accuracy and reliability of the examination as a function of the predictor variables were assessed.
Results & Impact of Findings: The examination was completed by 115 subjects. Diagnostic accuracy was significantly associated with the independent variables of case complexity, clinical experience, and testing condition. Overall, mean diagnostic accuracy and the extent to which the test consistently discriminated between subjects (i.e., yielded reliable scores) was higher when participants were given directed search instructions than when they were given first impression instructions. In addition, the pattern of reliability was found to depend on experience: simple cases offered the best reliability for discriminating between novices, complex cases offered the best reliability for discriminating between intermediate residents, and neither type of case discriminated well between experienced practitioners. These results yield concrete guidance regarding test construction for the purpose of diagnostic skill assessment. The instruction strategy and complexity of cases selected should depend on the experience level and breadth of experience of the subjects one is attempting to assess.
Contributorship/Role: Ongoing mentor for PI/first author (Ilgen JS, who was an education research fellow in our fellowship during the design and implementation of this study). I also served as co-author and co-investigator.
Dissemination 1: Ilgen JS, Bowen JL, **Yarris LM,** Fu R, Lowe RA, Eva K. Adjusting Our Lens: Can Developmental Differences in Diagnostic Reasoning Be Harnessed to Improve Health Professional and Trainee Assessment? *Acad Emerg Med* 2011; 18:S79-S86.

Research Question 2: Is an online tool designed to assess knowledge of pediatric respiratory emergencies feasible to implement in a learner population, and will pilot testing demonstrate validity evidence to support its use?
Investigation: Residents rotating in a pediatric Emergency Department may have limited experience in seasonal illnesses resulting in a potential knowledge gap. The objectives of this study were to establish the feasibility of implementing an online tool designed to assess knowledge of pediatric respiratory emergencies, and gather validity evidence from the results obtained from the instrument.
Methods: This was a prospective observational study. We created a needs assessment tool using publically available videos of children in respiratory distress. After viewing the videos, learners answered questions relating to diagnosis and management of illnesses causing upper and lower airway obstruction. Mean scores were compared between learners at different stages of training. Cohen's d was calculated to measure effect size. Pearson's coefficient was used to measure correlation between responses to various question types.
Results & Impact of Findings: Seventy-two participants completed the study. We noted statistically significant differences between the scores of experienced (2^{nd} and 3^{rd} year residents) versus novice (medical students and 1^{st} year residents) learners (78% vs 64%, $p<0.01$) with a large effect size (Cohen's d 1.1). There were no differences in mean scores between residents in Emergency Medicine and Pediatrics programs. Many residents and students did not follow established guidelines in answering questions related to the management of croup and bronchiolitis exposing knowledge gaps through this assessment. Our online needs assessment tool was feasible to implement using free technology, identified knowledge gaps relating to pediatric respiratory emergencies, and demonstrated evidence that performance was related to experience.
Contributorship/Role: I served as co-author and co-investigator in this study.
Dissemination 1: Hansen M, Cedar A, **Yarris LM,** Spiro D, Ilgen JS, Meckler G. Development and implementation of a web-based instrument to assess management of pediatric respiratory emergencies among trainees. [in submission, *Pediatrics*

Appendix 1	Letter of Support (superior); [redacted], MD, Editor-in-Chief, *Academic Emergency Medicine*
Appendix 2	Letter of Support (superior); [redacted], Editor-in-Chief, *Journal of Graduate Medical Education*
Appendix 3	Letter of Support (peer); [redacted], MD, MSHS, OHSU Research Director
Appendix 4	Letter of Support (peer); [redacted], MD, OHSU Education Section Co-Chief
Appendix 5	Letter of Support (learner); [redacted], MD, MCR, former Education Research Fellow
Appendix 6	Letter of Support (learner); [redacted], former resident and [redacted] Sports Medicine fellow