

# 2017 Annual Conference

EXCELLENCE



## Awards Program

March 3 - 5, 2017  
Gaylord Opryland Resort  
Nashville, TN

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# Honoring Excellence in Pulmonary and/or Critical Care Medicine Education

## 2017 AWARDS PROGRAM

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# Darlene Buczak Abstract Award for Educational Excellence

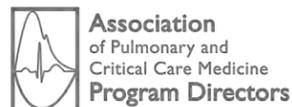
The **Darlene Buczak Abstract Award for Educational Excellence** recognizes Pulmonary and Critical Care Medicine training Program Directors, Associate Program Directors, faculty, and fellows-in-training for their outstanding contributions and commitment to medical education and training. The recipient is selected for success in applying an innovative educational method in his/her training program // **Congratulations to the 2017 awardee:**

**Rosemary Adamson, M.B.B.S.**  
University of Washington

The APCCMPD honors the contributions of all 2017 applicants:

**Diana J. Kelm, M.D.**  
Mayo Clinic

**Deepak R. Pradhan, M.D.**  
New York University School of Medicine



## Leadership Education for Critical Care Fellows Using Simulation

Presenter / Author: Rosemary Adamson, M.B.B.S.  
University of Washington

Authors: Trevor C. Steinbach, M.D.  
Basak Çoruh, M.D.  
David Carlbom, M.D.  
Nicholas J. Johnson, M.D.  
Patricia A. Kritek, M.D., Ed.M.  
University of Washington



### INTRODUCTION

Leadership skills are essential for critical care physicians. Most fellowship programs do not include focused education about leadership. Furthermore, there is no commonly employed framework for leadership training within pulmonary and critical care medicine. In order to address this gap in current training, a formal curriculum aimed at teaching leadership skills to critical care medicine fellows was developed using a novel framework. High-fidelity simulation was employed as a means to practice and solidify newly learned leadership techniques and behaviors.

### METHODS

Commonly identified leadership skills and behaviors were extracted from a review of the literature and used to develop a Crisis Leadership Framework (Fig. 1). This framework was used to teach leadership skills to first-year critical care fellows at a single institution. These skills were then assessed using high-fidelity simulation of low-frequency, high-risk critical care scenarios, with fellows leading multidisciplinary teams consisting of physicians, nurses, and respiratory therapists. Each scenario concluded with a clinical debrief led by the fellow. Immediate feedback on leadership behaviors was provided by the non-participating fellows, facilitated by a faculty member, using the Crisis Leadership Framework. Leadership skills were formally assessed by course faculty using the Non-Technical Skills for Surgeons (NOTSS) assessment tool (Fig. 2). Participants were also surveyed regarding their perceptions of the utility of the training and their leadership skills.

### RESULTS

After the first simulation session, all participating fellows (N = 11) agreed that they better understood key concepts of leadership (45% strongly agree, 55% somewhat agree) and all reported feeling better prepared to lead a team during crisis (45% strongly agree, 55% somewhat agree). Ninety-one percent of fellows felt comfortable leading a clinical debrief following the session (36% strongly agree, 55% somewhat agree). NOTSS ratings improved in all domains (scale 1-4) between the first and second simulation session: the situational awareness mean score increased from 2.5 to 3.3, communication and teamwork from 2.0 to 3.3, leadership from 2.0 to 3.0, and decision-making from 2 to 2.3.

### CONCLUSION

Implementation of a leadership curriculum within critical care fellowship training is both feasible and well-received by trainees. Focused development of leadership skills using simulation enhanced fellows' perceived leadership knowledge and preparation as well as their adoption of leadership behaviors. Further studies are needed to see if exposure to this curriculum translates to improved leadership skills and team performance during real-life emergencies.

### REFERENCES

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- Hunziker S, Buhlmann C, Tschan F, Balestra G, Legeret C, Schumacher C, Semmer NK, Hunziker P, Marsch S. Brief leadership instructions improve cardiopulmonary resuscitation in a high-fidelity simulation: a randomized controlled trial. *Crit Care Med* 2010;38(4):1086-91.

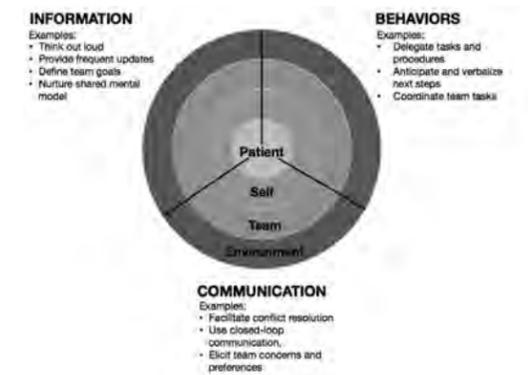


FIGURE 1. Leadership framework

ICU EMERGENCIES NOTSS CHECKLIST

Simulation date: \_\_\_\_\_ Observer: \_\_\_\_\_

CATEGORY	CATEGORY RATING*	ELEMENT	ELEMENT RATING**	FEEDBACK ON PERFORMANCE AND DEBRIEFING NOTES
Situational Awareness		Gathering information		
		Understanding information		
		Projecting and anticipating future status		
Decision Making		Containing options		
		Selecting and communicating action		
		Implementing and resolving decisions		
Communication and Teamwork		Exchanging information		
		Establishing a shared understanding		
		Coordinating team activities		
Leadership		Setting and maintaining standards		
		Supporting others		
		Coping with pressure		

\* 1 = Total  
2 = Marginal  
3 = Acceptable  
4 = Good  
5 = Not Applicable

\*\* Performance not observed (0) potentially endangering patient safety; does not compromise or requires  
Performance not observed (1) does not compromise or requires minor adjustments to workflow  
Performance near or at acceptable standard but requires attention (2)  
Performance at an acceptably high standard, involving patient safety, a positive team dynamic

FIGURE 2. NOTSS (Non-Technical Skills for Surgeons) checklist

## “Fellow of the Day”: A Novel Role in Continuity Clinic to Improve Fellow and Medical Student Outpatient Experiences

Presenter / Author: Diana J. Kelm, M.D.  
Mayo Clinic

Authors: Joseph H. Skalski, M.D.  
Kannan Ramar, M.B.B.S., M.D.  
Mayo Clinic



### INTRODUCTION

Pulmonary and Critical Care Medicine (PCCM) fellows at our institution are responsible for longitudinal care of their continuity clinic (CC) patients. These patients often generate paperwork or messages that require attention outside of regularly scheduled clinic time; such messages can be difficult to address if on a busy ICU rotation or on night shifts thus potentially resulting in a delay in a patient's outpatient care. Additionally, our fellows teach medical students during their hectic half-day of CC, which can interrupt the fellows' clinic flow and the teaching experience for medical students. To address these issues, we instituted an innovative pilot project of a new clinical role called the “Fellow of the Day (FOD).”

### ABSTRACT PRESENTATION

One fellow was assigned as the FOD and took responsibility to address patient care related messages or paperwork for any fellows away from their CC (i.e. in the ICU or on vacation) and teach the medical students. The FOD had a flexible schedule with fewer number of patients scheduled. We collected data using an electronic survey (REDCap, Vanderbilt University, Nashville, TN) that was sent to medical students, PCCM fellows, and supervising staff. Survey responses were based on a Likert scale. For questions pertaining to teaching medical students and addressing priority messages while in the ICU, the scale ranged from 1-5 (never = 1; rarely = 2; every once in a while = 3; sometimes = 4; almost always = 5). The scale ranged from 1-5 (never = 1; once a week = 2; several times a week = 3; daily = 4; N/A = 5) for questions on how often fellows managed patient care related messages or paperwork while in the ICU or on their day off. Those that chose N/A for these questions were excluded in the analysis, as they were not in the ICU during the time of this pilot study. We surveyed multiple stakeholders including fellows, medical students rotating through the clinic, and faculty. Sixteen fellows (94% response rate) responded to the pre-FOD survey and 15 fellows (88% response rate) to the post-FOD survey. Study results described in Table 1. Both fellows and medical students reported that FOD substantially improved the teaching experience. Nine (60%) fellows felt they were delayed in their CC when medical students were present before the FOD and only 1 (7%) post-FOD (p=0.002). Fellows were more likely to teach medical students (4.07 vs. 4.67, p=0.007) post-FOD. Medical students reported that they were more actively engaged in clinical patient care (shadowing alone 14 vs. 7, p=0.02) and enjoyed the teaching experience significantly post-FOD implementation (7 vs. 13, p=0.05). Fellows also felt that they spent less of their own time or time away from critically ill patients to focus on patient care related messages and paperwork post-FOD implementation. Thirteen fellows (87%) wanted to continue the FOD role at the end of the study period. The number of clinic patients seen by fellows did not change drastically with the FOD pilot. The CC staff thought the FOD role was good for teaching, were satisfied with the FOD role, and thought it resulted in a positive impact on their own workflow.

### DISCUSSION

Team-based care is an essential part of graduate medical education as it can decrease medical errors and improve job satisfaction.<sup>1,3</sup> This is the first novel study that uses the FOD role as a team-based approach in fellowships to improve CC experience for fellows and medical students. FOD implementation at our institution resulted in multiple benefits including improved teaching experience of medical students and better handling of patient messages when fellows are away from clinic.crisis (45% strongly

agree, 55% somewhat agree). Ninety-one percent of fellows felt comfortable leading a clinical debrief following the session (36% strongly agree, 55% somewhat agree). NOTSS ratings improved in all domains (scale 1-4) between the first and second simulation session: the situational awareness mean score increased from 2.5 to 3.3, communication and teamwork from 2.0 to 3.3, leadership from 2.0 to 3.0, and decision-making from 2 to 2.3.

### CONCLUSION

As the implementation of the FOD role was a huge success, the education committee has recommended continuation of having the FOD role in our fellowship.

### REFERENCES

1. Chang, W.Y., et al., Job satisfaction and perceptions of quality of patient care, collaboration and teamwork in acute care hospitals. J Adv Nurs, 2009. 65(9): p. 1946-55.
2. Zwarenstein, M., J. Goldman, and S. Reeves, Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. Cochrane Database Syst Rev, 2009(3): p. CD000072.
3. Helfrich, C.D., et al., Elements of team-based care in a patient-centered medical home are associated with lower burnout among VA primary care employees. J Gen Intern Med, 2014. 29 Suppl 2: p. S659-66.

TABLE 1. Results of the Fellows' Survey

	Pre-FOD	Post-FOD	Mean Difference	P Value
Teaching medical students <sup>A</sup>	4.07	4.67	0.6	0.007
Priority messages while in the ICU <sup>B</sup>	3.33	3	-0.33	0.62
Paperwork while in the ICU <sup>B</sup> (n=10)	1.8	1.1	-0.7	0.02
Come in on day off <sup>B</sup> (n=10)	1.8	1	-0.8	0.0002
Inbox messages while in the ICU <sup>B</sup> (n=12)	3.17	2.42	-0.75	0.04

FOD, Fellow of the Day

A: Never = 1; Rarely = 2; Every once in a while = 3; Sometimes = 4; Almost always = 5

B: Never = 1; Once a week = 2; Several times a week = 3; Daily = 4; N/A = 5

## Novel Blended Learning Course on Ultrasound for Rapid Assessment of Acute Respiratory Failure

Presenter / Author: Deepak R. Pradhan, M.D.  
New York University School of Medicine

Authors: Vikramjit Mukherjee, M.D.  
Bishoy Zakhary, M.D.  
Harald Sauthoff, M.D.  
New York University School of Medicine



### INTRODUCTION

Acute respiratory failure results in nearly 2 million yearly hospitalizations in the United States, with associated mortality over 20%. It requires expeditious diagnosis and treatment, and is relevant to many clinician groups including pulmonologists, intensivists, hospitalists, and emergency physicians. Point-of-care ultrasound provides rapid, bedside information on the etiology of acute respiratory failure that is non-invasive and without ionizing radiation. The Bedside Lung Ultrasound in Emergency (BLUE) protocol is a simple, reproducible algorithm utilizing ultrasound for the assessment of acute respiratory failure with an overall diagnostic accuracy of 90.5%. However, many providers lack competency in performing the BLUE protocol, and effective educational courses are lacking. We present a novel one-day course with a blended learning design to teach learners to correctly and rapidly use ultrasound for assessment of acute respiratory failure.

### ABSTRACT PRESENTATION

Learners completed pre- and post-course surveys recording learner characteristics, confidence in performing ultrasound exams for acute respiratory failure, confidence identifying relevant pathology on ultrasound, and effectiveness of course components. Learners also completed pre- and post-testing evaluating ultrasound knowledge and image interpretation in acute respiratory failure. Prerequisite reading materials were provided. The course was a blended learning design combining didactic and case-based lectures (Ultrasound Physics, 10 Signs of Lung Ultrasound, BLUE Protocol, Lower extremity Deep vein thrombosis study, Evidence behind BLUE protocol, and Lung/Pleural Pathology) with hands-on small group sessions with expert faculty, and case-based simulation assessments with learner feedback. Instructors used behavioral checklists during the simulation cases to objectively record learner performance of image acquisition, image interpretation, and adherence to BLUE protocol, as well as time to completion of the algorithm. Non-parametric testing was used for statistical analyses. Fifteen learners completed the course. The significant majority (79%) were current 3rd year Pulmonary/Critical Care Fellows in training. All learners had baseline ultrasound experience. Median (IQR) score for pre-test was 40 (25-55)% and post-test was 60 (45-80)% for the group, p<0.01. Learners felt more confident using ultrasound in performance of relevant ultrasound exams for acute respiratory failure after the course (Lung/Pleural US, Lower extremity Deep vein thrombosis study, and BLUE protocol; all p<0.02, Figure 1). Learners also felt more confident in identifying relevant pathology on ultrasound after the course (complicated pleural effusion, Quad sign, Sinusoid sign, consolidated lung, pneumothorax, lung point, and non-compressible deep vein; all p<0.04, Figure 2). Correct learner performance via behavioral checklists of image acquisition, image interpretation, and adherence to the BLUE protocol during simulated cases on pulmonary embolism, pneumonia, pulmonary edema, pneumothorax, and asthma exacerbation for the group were median 100%, 90%, 88%, 91%, and 100% respectively, and the median times for group performance of the BLUE protocol for these simulated cases were 5:51, 3:40, 7:32, 5:32, and 6:14 minutes respectively. Learners found the didactic lectures, hands-on sessions, and simulation cases all “Very Useful” (median 4 out of 5 on Likert usefulness scale), and rated the overall course as “Extremely Useful” (median 5 out of 5 on Likert usefulness scale).

### DISCUSSION

This blended learning design course comprised didactic and case-based lectures, small group hands-on sessions, and simulated case assessments. After the completion of the course, learners demonstrated statistical improvement in

objective ultrasound knowledge and image interpretation via pre- and post-testing, statistical improvement in confidence performing necessary ultrasound exams of acute respiratory failure and identifying relevant pathology on ultrasound, and showed excellent performance of the BLUE protocol on behavioral checklists during simulation cases.

### CONCLUSION

A 1-day blended learning design course for learners with baseline ultrasound experience was well received and resulted in tangible improvements in knowledge, image acquisition, and image interpretation skills while increasing confidence in performing an algorithmic method to rapidly assess acute respiratory failure through bedside point-of-care ultrasound.

### REFERENCES

1. Stefan MS et al. Epidemiology and outcomes of acute respiratory failure in the United States, 2001 to 2009: a national survey. J Hosp Med. 2013 Feb;8(2):76-82.
2. Lichtenstein D, and Meziere G. Relevance of Lung Ultrasound in the Diagnosis of Acute Respiratory Failure. Chest 2008 July; 134 (1):117-125.

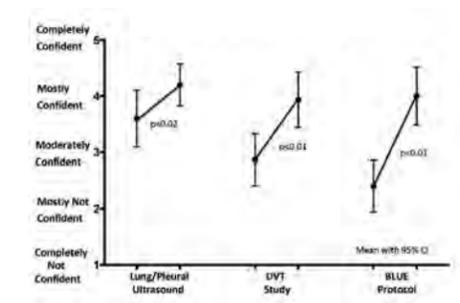


FIGURE 1. Confidence in Performing Ultrasound Exams: Pre-Course vs. Post-Course

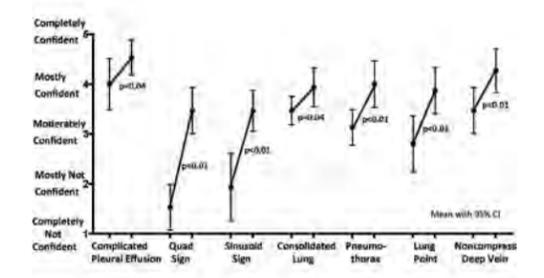


FIGURE 2. Confidence Identifying Pathology on Ultrasound: Pre-Course vs. Post-Course

# APCCMPD Abstract Award for Medical Education Research

The **APCCMPD Abstract Award for Medical Education Research** recognizes Pulmonary and Critical Care Medicine training Program Directors, Associate Program Directors, key clinical faculty, and fellows-in-training for their outstanding contributions and commitment to medical education research. This award is bestowed to one APCCMPD member each year. The recipient is selected for conducting innovative research focused on undergraduate or graduate medical education, in Pulmonary and/or Critical Care // **Congratulations to the 2017 awardee:**

**Lekshmi Santhosh, M.D.**  
University of California - San Francisco

The APCCMPD honors the contributions of all 2017 nominees:

**Bjorn K. Flora, M.D.**  
Stony Brook University Hospital

**Deepak R. Pradhan, M.D.**  
New York University School of Medicine

2017 AWARDEE

## Teaching Intensive Care Medicine from the Learners' Perspective: A Multicenter Evaluation

Presenter / Author: **Lekshmi Santhosh, M.D.**  
University of California - San Francisco

Authors: **Anna Brady, M.D.**  
University of Washington  
**W. Graham Carlos, M.D.**  
Indiana University



### BACKGROUND

It is important for teaching physicians to know what qualities are most valued by learners. To date, only two studies have been published addressing internal medicine residents' perceptions of teaching faculty.<sup>1,2</sup> We sought to expand on the evidence about this topic through a multicenter study at four geographically diverse academic medical centers. Our study focused on teaching characteristics of intensive care unit (ICU) physicians that learners perceive are most impactful.

### METHODS

The study was conducted at Indiana University, Johns Hopkins University, UCSF, and University of Washington. Internal medicine residents completed an anonymous online survey rating the importance of characteristics of ICU attending role models. Questions on our 37-item-questionnaire were derived from prior studies and from the Stanford Faculty Development Center for Medical Teachers Clinician Teaching program.<sup>1,3</sup> Learners also named impactful role models at their institutions. T-tests were used to compare scores.

### RESULTS

260 residents responded to the survey. The attributes most commonly rated as "very important" to trainees were that the attending enjoyed teaching house staff, demonstrated empathy and compassion to patients and families, explained clinical reasoning & differential diagnoses, treated non-M.D. staff members respectfully, and showed enthusiasm on rounds. Factors that trainees rated as less important were having numerous research publications, having served as a chief resident, sharing personal life with house staff, and organizing end-of-rotation social events.

### CONCLUSIONS

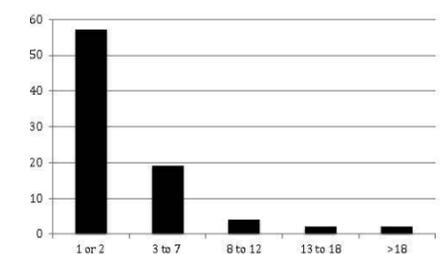
Our study provides new information to teaching faculty striving to impact their learners' education. While prior data demonstrated that learners valued attendings having served as a chief resident and sharing personal information with house staff, our study did not replicate this. We confirmed that learners appreciated teachers who are perceived to enjoy teaching. We also discovered that expression of empathy, explanation of clinical reasoning, and qualities of professionalism were influential. Table 1 shows the contrast between our study and the prior literature. This may reflect a new generation of learners, differences between ICU versus ward teaching, or institutional variations. Next steps include analyzing course evaluations of named attending role models and conducting thematic analysis to identify predictors of teaching excellence.

### REFERENCES

1. Wright, S., et al. "Attributes of excellent attending-physician role models." *New England Journal of Medicine* (1998).
2. Wright, S. "Examining what residents look for in their role models." *Academic Medicine* (1996).
3. Skeff, K., et al. "The Stanford faculty development program: a dissemination approach to faculty development for medical teachers." *Teaching and Learning in Medicine*. (1992).

**TABLE 1.** Differences between 1998 Wright NEJM Article Top 5 Characteristics of Excellent Attending-Physician Role Models and Our Data

NEJM Wright Article	Our Multi-Site Survey
Enjoys teaching housestaff	Enjoys teaching housestaff
Stresses importance of doctor-patient relationship	Demonstrates empathy & compassion to patients and families
Rates self highly as a role model for house staff	Explains clinical reasoning and differential diagnoses in the critically ill patient
Attended teaching workshops	Treats non-MD staff members respectfully
Served as chief resident	Shows enthusiasm for the topics discussed on rounds



**FIGURE 1.** Frequency with which the 84 Attendings Named as Excellent Role Models

## Effective Critical Care Ultrasound Education For Internal Medicine Residency, Through An Ultrasound Consults Elective Rotation

Presenter / Author: : Bjorn K Flora, M.D.  
Stony Brook University Hospital

Author: Sahar Ahmad, M.D.  
Stony Brook University Hospital



### BACKGROUND

Ultrasound (US) is fast becoming a new physical exam tool for hospitalized patients cared for by Internal Medicine (IM) trainees. This imaging modality provides real-time assessment of the patient's physiology and efficient diagnosis at bedside without needing to wait for radiological or technician dependent imaging and has recently been noted to be tested on the American Board of Internal Medicine (ABIM) exam. At our institution, we have developed an US elective rotation entitled "Ultrasound Consults: Applications of bedside ultrasound for the IM resident". The elective is available to all three years of IM resident trainees and is taught by Pulmonary Critical Care Medicine (PCCM) faculty and fellows, as Nobel et al (2007) found that proctored instruction to be an effective means of teaching image acquisition. This elective aims to provide US education to those that are interested to become adept at bedside US for the purpose of answering simple clinical questions. The objective of the course is to become proficient with respect to image acquisition and image interpretation for selected imaging that will enhance students and/or residents' patient evaluations of critically ill patients.

### METHODS

The pre-requisite for the course is completion of one US simulation training session in the internal medicine department's simulation curriculum. The elective is one week in duration and includes 1-2 students and/or trainees at any given rotation. Reading material and online references are provided prior and during the course. Selected US examinations are performed in clinical context for the following organ systems and clinical syndromes: Chest US, intravascular volume assessment, vascular access and diagnostics, basic echocardiography and US for cardiac arrest. Incorporation of findings into patient care as well as documentation of US findings into the electronic medical records are included in objectives. At the end of the rotation students and/or trainees must present a journal article review and produce an US procedure document which outlines management strategy as guided by US findings. We also offer an institutional certification process for cardiac arrest so that the student and/or trainee can participate in cardiac arrest US.

### RESULTS

There has been 100% positive feedback from medical students and residents taking the course. There has been noted improvement on these students and residents US skills at subsequent simulation courses. 100% of residents are able to complete the listed hands-on skills objectives to a "pass" degree as assessed by the course director.

### CONCLUSIONS

We promote elective rotation style teaching for bedside ultrasound for the IM resident. We believe that the combined approach of reading, simulation, and real-time patient care in an elective rotation represents an effective method of teaching this important imaging modality. We believe the multifaceted approach, in conjunction with the learner motivation that comes with integrating new skills into consultative decision making in a style of rotation which is already familiar to IM residents, will continue to prove effective and

beneficial. We are planning to further evaluate the effectivity of this elective program. So far, preliminary reviews and exam data suggest high levels of effectivity and learner satisfaction.

### REFERENCES

Noble et al. Assessment of knowledge retention and the value of proctored ultrasound exams after the introduction of an emergency ultrasound curriculum. BMC Medical Education. 2007; 7:40-45.

## Novel Blended Learning Course on Ultrasound for Rapid Assessment of Acute Respiratory Failure

Presenter / Author: Deepak R. Pradhan, M.D.  
New York University School of Medicine

Authors: Vikramjit Mukherjee, M.D.  
Bishoy Zakhary, M.D.  
Harald Sauthoff, M.D.  
New York University School of Medicine



### INTRODUCTION

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### ABSTRACT PRESENTATION

Learners completed pre- and post-course surveys recording learner characteristics, confidence in performing ultrasound exams for acute respiratory failure, confidence identifying relevant pathology on ultrasound, and effectiveness of course components. Learners also completed pre- and post-testing evaluating ultrasound knowledge and image interpretation in acute respiratory failure. Prerequisite reading materials were provided. The course was a blended learning design combining didactic and case-based lectures (Ultrasound Physics, 10 Signs of Lung Ultrasound, BLUE Protocol, Lower extremity Deep vein thrombosis study, Evidence behind BLUE protocol, and Lung/Pleural Pathology) with hands-on small group sessions with expert faculty, and case-based simulation assessments with learner feedback. Instructors used behavioral checklists during the simulation cases to objectively record learner performance of image acquisition, image interpretation, and adherence to BLUE protocol, as well as time to completion of the algorithm. Non-parametric testing was used for statistical analyses. Fifteen learners completed the course. The significant majority (79%) were current 3rd year Pulmonary/Critical Care Fellows in training. All learners had baseline ultrasound experience. Median (IQR) score for pre-test was 40 (25-55)% and post-test was 60 (45-80)% for the group,  $p < 0.01$ . Learners felt more confident using ultrasound in performance of relevant ultrasound exams for acute respiratory failure after the course (Lung/Pleural US, Lower extremity Deep vein thrombosis study, and BLUE protocol; all  $p < 0.02$ , Figure 1). Learners also felt more confident in identifying relevant pathology on ultrasound after the course (complicated pleural effusion, Quad sign, Sinusoid sign, consolidated lung, pneumothorax, lung point, and non-compressible deep vein; all  $p < 0.04$ , Figure 2). Correct learner performance via behavioral checklists of image acquisition, image interpretation, and adherence to the BLUE protocol during simulated cases on pulmonary embolism, pneumonia, pulmonary edema, pneumothorax, and asthma exacerbation for the group were median 100%, 90%, 88%, 91%, and 100% respectively, and the median times for group performance of the BLUE protocol for these simulated cases were 5:51, 3:40, 7:32, 5:32, and 6:14 minutes respectively. Learners found the didactic lectures, hands-on sessions, and simulation cases all "Very Useful" (median 4 out of 5 on Likert usefulness scale), and rated the overall course as "Extremely Useful" (median 5 out of 5 on Likert usefulness scale).

### DISCUSSION

This blended learning design course comprised didactic and case-based lectures, small group hands-on sessions, and simulated case assessments. After the completion of the course, learners demonstrated statistical improvement in

objective ultrasound knowledge and image interpretation via pre- and post-testing, statistical improvement in confidence performing necessary ultrasound exams of acute respiratory failure and identifying relevant pathology on ultrasound, and showed excellent performance of the BLUE protocol on behavioral checklists during simulation cases.

### CONCLUSION

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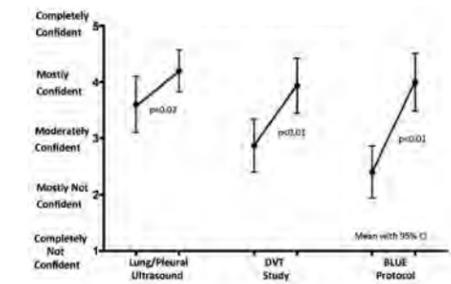


FIGURE 1. Confidence in Performing Ultrasound Exams: Pre-Course vs. Post-Course

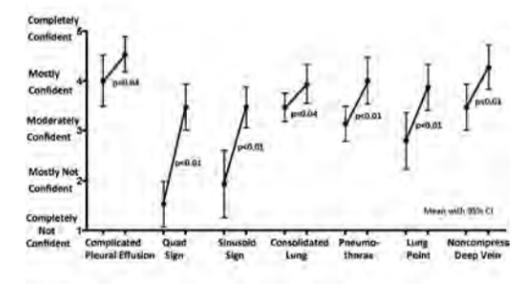


FIGURE 2. Confidence Identifying Pathology on Ultrasound: Pre-Course vs. Post-Course

# APCCMPD Emerging Educator Award

In its inaugural year, the **APCCMPD Emerging Educator Award** honors an up-and-coming clinician educator. The recipient is selected for his/her work in delivering and promoting medical education in Pulmonary and/or Critical Care Medicine through various means at the local and regional level // **Congratulations to the 2017 awardee:**



## **Rosemary Adamson, M.B.B.S.**

Assistant Professor  
Associate Program Director  
University of Washington

**Dr. Rosemary Adamson** has a BA from Cambridge University, UK, and received her medicine degree from Guy's, King's and St. Thomas' School of Medicine, London, UK. She started her graduate medical training with two years at Guy's & St. Thomas' Hospitals, London. Rosemary then moved to New York University, New York, for internal medicine residency, where she stayed as a chief resident and then a fellow in pulmonary & critical care medicine. She transferred to the University of Washington to complete her fellowship. She became a staff physician at the Seattle VA and an assistant professor of medicine, clinician-educator track, at the University of Washington in 2014. She became the associate program director for the UW PCCM fellowship program in 2015. Along the way, she married and had two children. Rosemary is very interested in the use of technology in medical education and is a proponent of making educational tools freely accessible. She is part way through developing a series of educational videos on bronchoscopy for fellows and works on many other educational projects within pulmonary & critical care medicine. She is thrilled to receive this award.

The APCCMPD honors  
the contributions of all 2017 nominees:

## **Sahar Ahmad, M.D.**

Assistant Professor  
Stony Brook University Hospital



## **Gabriel Bosslet, M.D.**

Associate Professor of Medicine  
Assistant Professor of Clinical Medicine  
Director, Pulmonary and Critical Care Fellowship  
Indiana University



## **José Cárdenas-García, M.D.**

Assistant Professor  
Associate Program Director  
Pennsylvania State College of Medicine and  
The Milton S. Hershey Medical Center



## **Nirav Shah, M.D.**

Assistant Professor  
Program Director, Pulmonary and Critical Care Fellowship  
University of Maryland School of Medicine



# APCCMPD Outstanding Educator Award

APCCMPD members work diligently to foster excellence in education through the training and mentoring of the next generation of educators in Pulmonary and/or Critical Care. The annual **Outstanding Educator Award (OEA)** recognizes clinicians who are exemplary clinician educators. The recipient is chosen by his/her peers for demonstrating excellence in the development of future physicians //

## **Congratulations to the 2017 awardee:**

**Edward F. Haponik, M.D.**  
Professor of Medicine  
Wake Forest School of Medicine

The APCCMPD honors the contributions of all 2017 nominees:



**Stacey M. Kassutto, M.D.**

Assistant Professor of Clinical Medicine  
University of Pennsylvania



**Anthony Saleh, M.D.**

Associate Clinical Professor of Medicine  
Director, Pulmonary and Critical Care Fellowship  
New York Methodist Hospital, Weill Cornell Medicine



**David Schulman, M.D., M.P.H.**

Associate Professor of Medicine  
Director, Pulmonary and Critical Care Fellowship  
Emory Medical Center



**Tisha Wang, M.D.**

Associate Clinical Professor // Program Director,  
Pulmonary and Critical Care Fellowship  
UCLA Department of Pulmonary and Critical  
Care Medicine

**Dr. Edward Haponik** is a Professor of Medicine at Wake Forest University School of Medicine. He was born in Fall River, MA, completed premedical training at Providence College, and graduated from Bowman Gray School of Medicine of Wake Forest University in 1974. Following internship, residency and chief residency at North Carolina Baptist Hospital, he had pulmonary fellowship training at Johns Hopkins Hospital, where he joined the faculty.

Medical education has been a focus of his career path, and personal mentors have included Drs. Warren Summer, Ko Pen Wang, and William Hazzard. Dr. Haponik has served as the Internal Medicine Residency Program Director at Louisiana State University School of Medicine in New Orleans, and PCCM Fellowship Director at LSU and Wake Forest. He has been the Director of Clinical Operations in the Pulmonary/Critical Care Divisions at Wake Forest and Johns Hopkins Universities.

Particular areas of clinical research have included bronchoscopy, obstructive sleep apnea, respiratory complications in burn patients, liberation from mechanical ventilation and respiratory problems of the elderly. Because of the dedicated efforts of junior faculty and fellows Dr. Haponik has contributed over 220 journal articles and book chapters and has edited a book on acute inhalation injury. Works have included 12 articles focused upon aspects of medical education. Dr. Haponik's NIH-funded research has included a Preventive Pulmonary Academic Award and a Sleep Academic Award for curricular development. Teaching approaches have underscored use of small group instruction, standardized simulated patients promoting sleep histories, and use of simulation for hands-on bronchoscopy training in transbronchial needle aspiration. Dr. Haponik has received over 30 teaching awards, and has twice received Wake Forest University's Leonard Tow Humanism in Medicine Award.

All of these endeavors have been made possible by the inspirational scholarly productivity of fellows and their passionate, unconditional commitment to patients. Dr. Haponik's career in medicine has been possible because of their continuing achievements and, above all the loving support of his wife Claire, sons Ed and John, and grandchildren.



# APCCMPD, CHEST, and ATS Medical Education Research Fund Award

The **APCCMPD, ACCP, and ATS Education Research Award** is a monetary grant that is bestowed to fellows-in-training, junior faculty members, Associate Program Directors, and Program Directors to fund a project that furthers Pulmonary and/or Critical Care Medicine fellow training // **Congratulations to the 2017 awardees:**

## 1<sup>ST</sup> PLACE



### **Effie Singas, M.D.**

Associate Professor  
Hofstra Northwell School of Medicine

Validation of a Novel Training Method to Assess Pulmonary Critical Care Medicine (PCCM) Fellows' Competence to Perform Thoracentesis

## 2<sup>ND</sup> PLACE



### **Stacey Kassutto, M.D.**

Assistant Professor of Clinical Medicine  
University of Pennsylvania

The Impact of a Novel Ambulatory Curriculum on Pulmonary Fellowship Training

The APCCMPD honors the contributions of all 2017 applicants:

### **Stephanie Maximous, M.D.** University of Pittsburgh

Piloting A Targeted, Spaced, Mastery-Learning Global Health Point-of-Care Ultrasound Curriculum For Internal Medicine Residents



### **Luke Seaburg, M.D.** University of Washington

Leveraging 3D-Printing for Low-Cost High-Fidelity Advanced Bronchoscopic Technique Training and Endobronchial Ultrasound Simulation



### **Sahar Ahmad, M.D. & Rajeev Patel, M.D.** Stony Brook University Hospital

A Standardized Paradigm for Fellowship Ultrasound Education



## Validation of a Novel Training Method to Assess Pulmonary Critical Care Medicine (PCCM) Fellows' Competence to Perform Thoracentesis

Effie Singas, M.D.

Associate Professor

Hofstra Northwell School of Medicine

The Accreditation Council for Graduate Medical Education (ACGME) guidelines for pulmonary and critical care medicine (PCCM) fellowship training programs require that fellows achieve competence in the performance of various invasive procedures including thoracentesis, central venous access, chest tube placement, bronchoscopy and endotracheal intubation.<sup>1</sup> However, the ACGME has not defined criteria for establishing competency in these procedures, aside from requiring at least 100 bronchoscopies by the end of fellowship training. Traditionally, fellows have been trained by supervisory attendings following the medical tradition of the apprenticeship model. Determination of competency has been based on subjective faculty opinion and the number of procedures performed. However, performance of a set number of procedures does not assure achievement of competency.<sup>2</sup> Furthermore, there is increasing consensus that this may not be the safest approach.<sup>3</sup> One means of improving procedural training and competency assessment is through the increasingly popular use of simulation models, although this approach does not fully replicate the real world experience encountered when performing procedures on patients.

Program directors and trainees would benefit from improved objective means of evaluating procedural competency in a patient care environment. Ideally, assessment of competency should be based on objective criteria determined by independent reviewers. It is not clear that bedside evaluation by supervising attendings is the most objective means of determining competency. There are inherent problems with bias when training faculty is responsible for the subjective determination of the competence of their trainee.

We propose a more objective and novel means of assessing procedural competency in a PCCM fellowship program using video recording of trainee performance of procedures during an actual patient encounter, with offline scoring of the videos by an independent faculty observer using a validated procedural performance checklist. Thoracentesis will be the prototype for procedural competency testing in this model. In addition to the checklist assessment, review of the video following the procedure by the supervising faculty and the fellow provides valuable visual feedback to the trainee that can identify potential problems and impediments to achieving competency.<sup>4</sup> The video can be available for repeated review, and thus can be an effective training tool for PCCM fellows. The methods described in this proposal can also be applied to other procedures that are part of the PCCM fellowship training program.

Video recording has been used for teaching and assessing residents in the operating room. Surgical residents have been evaluated during the placement of central lines using Google Glass on a patient simulator.<sup>5</sup> Several authors report using validated checklists in training<sup>6</sup> and assessment of thoracentesis.<sup>7</sup> In our pilot study, we performed video-recordings of 11 fellows performing thoracentesis during actual patient

encounters and used objective offline scoring of the procedure by two independent reviewers.<sup>8</sup> This report, to the best of our knowledge, is the first that applies video recording for determination of procedural competency in a PCCM fellowship program. In addition to competency assessment, video recording of procedures facilitates the formation of a video library of scenarios, near misses, and unexpected findings that can serve as a learning repository. Each fellow will have a finite number of procedures during their training; the video library can significantly increase their exposure to difficult or unusual situations that can help the fellow achieve mastery.<sup>4</sup>

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## The Impact of a Novel Ambulatory Curriculum on Pulmonary Fellowship Training

Stacey Kassutto, M.D.

Assistant Professor of Clinical Medicine

University of Pennsylvania

Pulmonary fellowship trainees are expected to obtain the knowledge and skills necessary for independent medical practice. Accordingly, the Accreditation Council for Graduate Medical Education (ACGME) set forth curricular milestones and learning objectives for trainees in pulmonary medicine. Adopted in July 2014, these milestones were the result of a consensus among the American College of Chest Physicians, the Society of Critical Care Medicine, the American Thoracic Society, and the Association of Pulmonary and Critical Care Medicine Program Directors.<sup>14</sup> The milestones and entrustable professional activities require fellows to practice evidence-based pulmonary medicine "across multiple health care settings." Many of the required medical knowledge and patient care competencies are encountered only in outpatient care settings.<sup>4</sup> However, the majority of clinical training during pulmonary fellowship remains inpatient focused. In fact, the ACGME requires that fellows spend only 7% of training in the outpatient setting (1 half-day of clinic weekly for 30 months during a 36 month fellowship).<sup>5</sup>

This current training paradigm often delays the honing of outpatient management skills. Thus, relying entirely on direct engagement with patients in a continuity clinic experience for all ambulatory education is likely insufficient preparation for independent practice after fellowship. To meet a similar educational need in ambulatory internal medicine, the Yale School of Medicine developed a literature-based syllabus that covers a wide array of primary care topics. This collection of case-based teaching scripts is published as the "Yale Office-Based Medicine Curriculum" and is now used in more than 170 internal medicine residency training programs throughout the country.<sup>6,7</sup>

To meet this need in pulmonary training we piloted a structured case- and evidence-based outpatient fellowship curriculum at the Perelman School of Medicine at the University of Pennsylvania (PSOM) and found the curriculum to be a feasible method of ambulatory content delivery.<sup>8</sup> After implementation, the fellows reported an improved sense of competency in outpatient pulmonary medicine and improved preparation for independent postgraduate practice. However, additional research is required to assess the curriculum for knowledge and performance outcomes, to demonstrate sustainability over time, and to test its generalizability to other institutions. In this study we aim to investigate the impact of the outpatient curriculum on fellows' ambulatory knowledge, patient interactions, and self-perceived competency via a multi-institution observational study.

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