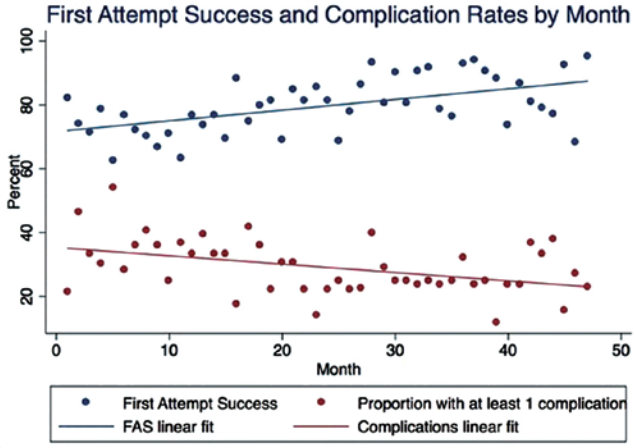
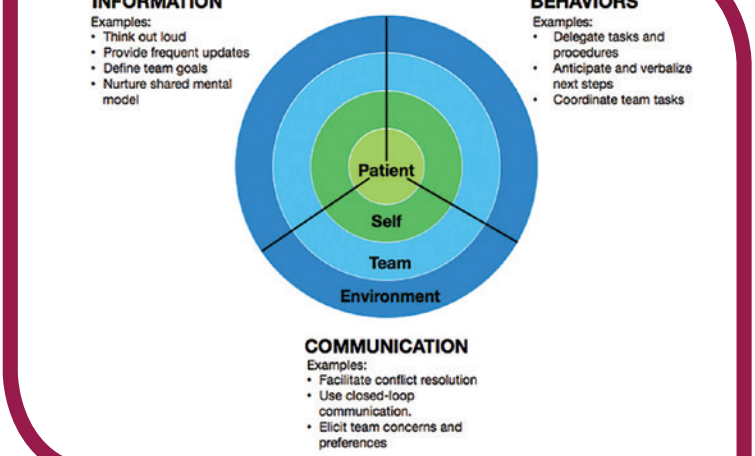
EDUCATION





Innovations in Fellowship Education

2017 Highlights Book

ATS 2017
Where today's science meets tomorrow's care™

May 19 - May 24, 2017
Washington, DC
conference.thoracic.org

TABLE OF CONTENTS

ATS would like to showcase the following three institutions who submitted an updated abstract. The University of Arizona submitted the Top Update for 2017

PROGRAM DETAILS

The American Thoracic Society greatly values a strong fellowship program as a means of academic and clinical success. In an effort to recognize programs that implement exceptional practices, the ATS Training Committee developed the Innovations in Fellowship Education Award Program. All pulmonary, critical care, sleep, and allergy fellowship programs (adult and pediatric) were invited to submit one abstract showcasing a novel and innovative best practice method. Abstracts were reviewed and ranked by the ATS Training Committee based on the following criteria:

1. **Innovation:** How unique is the educational program? What is new and different?
2. **Implementation / Sustainability:** How was the program implemented and how effective was such implementation? Was this program sustainable over time?
3. **Transferability:** How easily might this educational program be adopted by other programs?
4. **Outcomes:** Are there reported outcomes or plans to measure them? The goal of this program is to honor fellowship programs that demonstrate educational excellence and share these best practices with other programs.

All abstracts that were received are published within this booklet. The ATS Training Committee would like to thank all the programs that submitted abstracts and applauds them for their innovative and outstanding work!

The committee is pleased to honor the following top programs:

University of Washington

Leadership Education for Critical Care Fellows Using Simulation

Boston University

An Interactive, Flipped-Classroom Approach to Introducing Pulmonary Fellows to Flexible Bronchoscopy

Mount Sinai St. Luke's-West-ICAHN School of Medicine

Promoting Humanism in Pulmonary & Critical Care Medicine: For Fellows, By Fellows

Oregon Health and Sciences University

Using High Fidelity Simulation-based Education to Improve Practitioner Competence and Comfort in Ventilator Management

The Medical University of South Carolina

A Longitudinal Curriculum in Critical Care Ultrasonography Training for Pulmonary and Critical Care Medicine Fellowships

TOP ABSTRACT OF 2017! CONGRATS!

University of Washington

Seattle, WA

Leadership Education for Critical Care Fellows Using Simulation

Abstract Authors: Trevor C. Steinbach MD; Rosemary Adamson MB BS; David Carlbom MD; Nicholas J. Johnson, MD; Patricia A. Kritek MD, EdM; and Başak Çoruh, MD
Program Director: Mark Tonelli, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

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.

DISCUSSION

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.

FIGURE 1

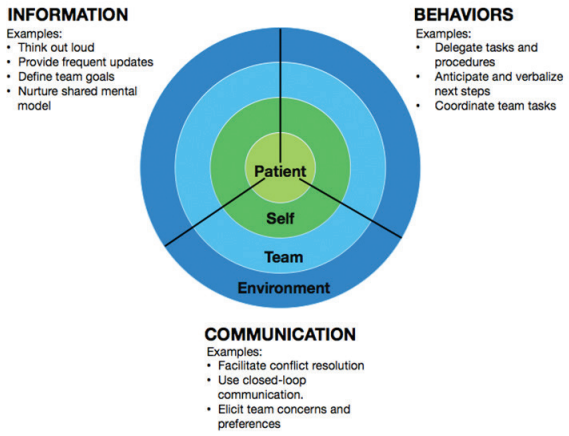


FIGURE 2

ICU EMERGENCIES NOTSS CHECKLIST

Simulation date _____ Observer _____

Simulation scenario _____

CATEGORY	CATEGORY RATING*	ELEMENT	ELEMENT RATING*	FEEDBACK ON PERFORMANCE AND DEBRIEFING NOTES
SITUATIONAL AWARENESS		GATHERING INFORMATION		
		UNDERSTANDING INFORMATION		
		PROJECTING AND ANTICIPATING FUTURE STATE		
DECISION MAKING		CONSIDERING OPTIONS		
		SELECTING AND COMMUNICATING OPTION		
		IMPLEMENTING AND REVIEWING DECISIONS		
COMMUNICATION AND TEAMWORK		EXCHANGING INFORMATION		
		ESTABLISHING A SHARED UNDERSTANDING		
		COORDINATING TEAM ACTIVITIES		
LEADERSHIP		SETTING AND MAINTAINING STANDARDS		
		SUPPORTING OTHERS		
		COPING WITH PRESSURE		

Rating*

1	Poor	Performance endangered or potentially endangered patient safety, serious remediation is required
2	Marginal	Performance indicates cause for concern, considerable improvement is needed
3	Acceptable	Performance was of a satisfactory standard but could be improved
4	Good	Performance was of a consistently high standard, enhancing patient safety; it could be used as a positive example for others
	N/A	Not Applicable

Boston University

Boston, MA

An Interactive, Flipped-Classroom Approach to Introducing Pulmonary Fellows to Flexible Bronchoscopy

Abstract Authors: David Chiasiang Chu, MD and Christine Campbell Reardon, MD
Program Director: Christine Campbell Reardon, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Flexible bronchoscopy is an essential skill for pulmonary fellows to master over the course of fellowship. In many programs, there is an orientation that includes an introduction to bronchoscopy. However, the amount of instruction and hands-on experience that fellows receive prior to performing clinical bronchoscopies is often very limited. Additionally, information obtained in the course of performing clinical bronchoscopies may be variable. In order to prepare our fellows to perform bronchoscopy prior to performing the procedure in live patients, and to standardize the information they received, we developed an interactive, flipped classroom and simulation-based curriculum to introduce flexible bronchoscopy to pulmonary fellows.

METHODS

We performed a needs assessment of current pulmonary fellows and faculty about the familiarity and comfort of fellows with bronchoscopy topics and procedural skills. Based on the results of this survey, we created a curriculum of relevant bronchoscopy topics to provide more hands-on training early in the first year of training. Our curriculum included a half-day orientation, consisting of a 30-minute didactic session followed by bronchoscopy practice on plastic models and with a high-fidelity virtual reality (VR) simulator. Fellows were instructed to complete 15 VR bronchoscopies using the simulator within the first 3 months of training. Additionally, over the first month of training, fellows participated in three 1-hour sessions in a flipped-classroom format covering general bronchoscopy topics. Prior to these sessions, fellows were provided with 2-3 page outlines of bronchoscopy topics we created based on a current review of the literature. Each session was facilitated by a faculty member, using a PowerPoint presentation and notes we created to guide key teaching points. The sessions began with questions based on the provided outlines to assess if fellows had reviewed the material. Then, the fellows participated in a case-based group discussion about management decisions focused on the topics assigned for each session.

RESULTS

In this ongoing study, 6 first-year fellows were assessed at the start of orientation using the APCCMPD novice bronchoscopy cognitive test to establish their baseline level of knowledge. Repeat assessment is planned after 12 months of clinical rotations to determine the long-term retention of information following participation in the curriculum. Their scores will be compared to the scores of fellows (N=6) who completed their first year of training prior to implementation of the introductory curriculum. Additionally, fellows will be surveyed on their perceptions of the utility of the sessions, training materials and self-directed practice with VR bronchoscopy.

DISCUSSION

We have created an interactive flipped classroom and simulation-based curriculum to cover bronchoscopy topics early in fellowship training. Our innovation lies in both the creation of quick reference materials for fellows to use when planning and performing bronchoscopy, and in the introduction of this information in an interactive format. This curriculum was created to be self-contained and would require little preparation to implement at other institutions.

Mount Sinai St. Luke's-West-ICAHN School of Medicine

New York, NY

Promoting Humanism in Pulmonary & Critical Care Medicine: For Fellows, By Fellows

Abstract Authors: Mirna Mohanraj, MD; Nisha Kotecha, MD; Janet Shapiro, MD
Program Director: Mirna Mohanraj, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Humanism in healthcare is characterized by a compassionate relationship between physician and patient. It reflects attitudes and behaviors that are sensitive to the values and background of others. Trainee burnout, poor cross-cultural interactions and limited understanding of how patients experience illness are a few factors that impair trainees' provision of humanistic care. Inattention to well-being may lead to job dissatisfaction, emotional exhaustion and psychological impairment. We developed a fellow-devised and fellow-directed curriculum to strengthen practice of patient-centered care and to promote physician well-being.

METHODS

A needs assessment was compiled from previously validated questionnaires on mindfulness, stress and burnout. Nine fellows completed the questionnaire. Each month, a fellow leader – under faculty supervision - becomes a 'mini-expert' in a curriculum topic by exploring relevant materials and creating an interactive discussion forum. Session topics range from moral distress to spirituality in medicine to resilience in training. Fellow participants are engaged via various techniques and resources including meditation, literature and narrative medicine. In addition, the program addresses several ACGME-mandated areas of focus: recognition of impairment in self and peers; fatigue mitigation; accountability to patients, society and the profession; sensitivity to a diverse patient population; leadership and communication.

RESULTS

Selected notable results from the needs assessment include: 78% felt emotionally drained after work; 33% stated they have difficulty respecting patient values in decision-making; 45% reported that they talked about work in a negative way; 22% reported they did their job mechanically; 56% felt that work demands interfered with relieving patient suffering; 33% felt they did not tolerate work pressure well. After five sessions, the baseline questionnaire was re-administered with marked improvements in several areas. Only 22% felt emotionally drained after work; zero fellows felt they had difficulty respecting patient values in decision-making, and 12% reported talking about work in a negative way. While the course is in its early stages, qualitative reviews indicate that learned strategies are immediately applicable to self-care and patient care. As supervisors and mentors to junior trainees, fellows model learned strategies in daily interactions. Faculty have been inspired to engage via literature review and faculty development sessions in topics of humanism and well-being.

DISCUSSION

Trainee-devised programs in humanism and well-being may be more impactful than those devised at the program- or system-level. This is a unique program where fellows are both leaders and participants. The curriculum can be easily adopted and adapted (with zero financial investment) for medical trainees at any level.

Oregon Health & Science University

Portland, OR

Using High Fidelity Simulation-based Education to Improve Practitioner Competence and Comfort in Ventilator Management

Abstract Authors: Matthew D. Champion, MD; Jeffrey A. Gold, MD; Stephanie A. Nonas, MD
Program Director: Jeff A. Gold, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Mechanical ventilation is an integral part of life-supportive care for critically ill patients. Numerous studies demonstrate significant underuse of lung protective (low tidal volume) ventilation. Failure to recognize the indications for lung protective ventilation and incorrect implementation of these practices may be due in part to inadequate training. Didactic-only curricula fall short in preparing trainees to identify changing respiratory physiology, such as air trapping, acute pneumothorax, or developing ARDS. Additionally, deliberate practice and assessment of trainees in mechanical ventilation is often limited by our inability to control the environment, patient mix, and concerns about patient safety. Simulation affords a unique educational opportunity for teaching and assessment. We have developed a simulation-based ventilation curriculum aimed at increasing our trainee readiness to manage mechanical ventilation.

METHODS

We identified gaps in practice related to ventilator management through direct assessment, faculty surveys, and chart review of adverse patient events. Based on these identified gaps, we developed a simulation-based curriculum consisting of baseline knowledge and skills assessment, brief introduction to the simulation environment, and three interactive high-fidelity sessions designed to mimic an ICU environment. The trainees progressively "manage" a simulated patient on a ventilator – from intubation to writing orders to responding to developing ARDS to managing ventilator emergencies. Each session contains three basic patient scenarios: 1) normal lungs, 2) obstructive lung disease, and 3) hypoxemic respiratory failure – each case with a built in ventilator "emergency" such as acute pneumothorax or mainstem intubation. Between cases there is a structured formative debrief to go over core concepts and interactive question/answer with the simulation leader. Following each session the trainees evaluate the usefulness of each scenario as well as their own comfort level in dealing with the scenario before and after the simulation.

RESULTS

15 critical care fellows (PGY 4-6) have participated in our simulations, including 7 fellows as part of their introductory "bootcamp." The overall course evaluation for the ventilation/ARDS simulations was 4.83/5; ≥86% felt the course taught new information/skills and 100% reported that training improved their comfort with ventilation/ARDS (Figure). We have validated our ventilator knowledge pre-test, and are now validating our skills and knowledge post-test.

DISCUSSION

High-fidelity simulation is a viable educational approach to allow deliberate practice surrounding mechanical ventilation. Our ongoing studies will determine the impact of training on clinical performance and we plan to expand our curriculum to the broader range of trainees and critical care practitioners at our institution.

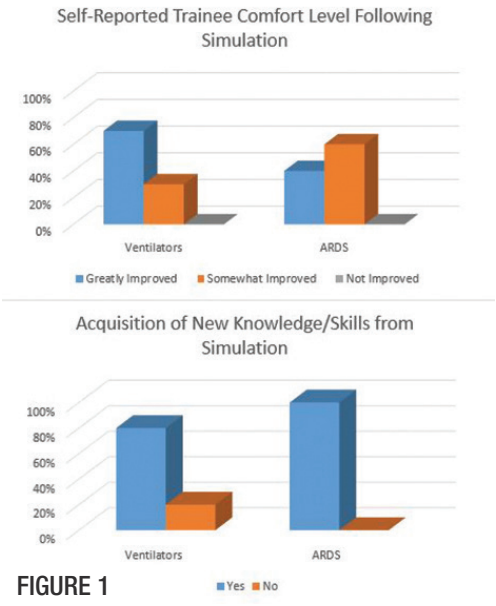


FIGURE 1

The Medical University of South Carolina

Charleston, SC

A Longitudinal Curriculum in Critical Care Ultrasonography Training for Pulmonary and Critical Care Medicine Fellowships

Abstract Authors: Branden W. Luna DO; Nicholas J. Pastis MD; and John T. Huggins, MD
Program Director: Nicholas J. Pastis, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Critical care ultrasound (CCUS) is a noninvasive tool used to diagnose unspecified shock states, acute respiratory failure, assess volume resuscitation, identify a source in septic shock, and for procedural guidance. While ACGME guidelines recommend the use of ultrasound to improve safety and success of many procedures done in the ICU, no official statement has been published regarding formal CCUS training during pulmonary and critical care medicine (PCCM) fellowship. The authors aim to describe a comprehensive CCUS curriculum used to teach thoracic, abdominal, and vascular ultrasound, along with basic echocardiography.

METHODS

The curriculum consisted of three distinct educational domains: basic ultrasonography and knobology, image acquisition skills, and image interpretation skills. We included 3 phases of CCUS training: (1) Onboarding distance learning covering both basic ultrasonography/knobology and image interpretation skills; (2)a 1-day boot camp with traditional didactic teaching sessions, problem based learning sessions that emphasizes clinical application of CCUS findings, and hands-on preceptor led training sessions; (3) a longitudinal review which emphasizes building an image portfolio with periodic mentor review and multidisciplinary CCUS conferences. All content is based on learning objectives as recommended by the 2009 ACCP/SRLF consensus statement on CCUS training. Evaluation of our subjects, which were 5 first year PCCM fellows, was done by traditional multiple choice written testing along with multimedia platform based questions and covered basic ultrasound objectives, image interpretation skills, and clinical application questions. These domains were tested prior to beginning our educational intervention and immediately after our boot camp sessions. Subjects were also tested on image acquisition skills prior to our educational intervention using a simulated patient and checklist based evaluation. They were then retested 4 months into the longitudinal experience using the same method as which they were pre-tested prior to the boot camp intervention.

RESULTS

Five first year fellows at our institution underwent the CCUS curriculum. Fellows were evaluated in image interpretation and problem based critical application of CCUS. Cumulative performance on pre-test and post-test evaluations was 57.3% and 92% respectively. We also evaluated image acquisition skills prior to and after our intervention and 4 months of structured image portfolio development and dedicated educational sessions on CCUS. The cumulative performance on pre-test and post-tests were 50.1% and 82.4% respectively.

DISCUSSION

CCUS curriculum incorporated into fellowship training which utilized online distance learning modules, traditional didactic sessions, problem-based learning exercises, and hands-on training with preceptor oversight was successful in achieving initial and longitudinal competency in a small cohort of fellows.

FIGURE 1: GRAPHIC REPRESENTATION OF CCUS CURRICULUM

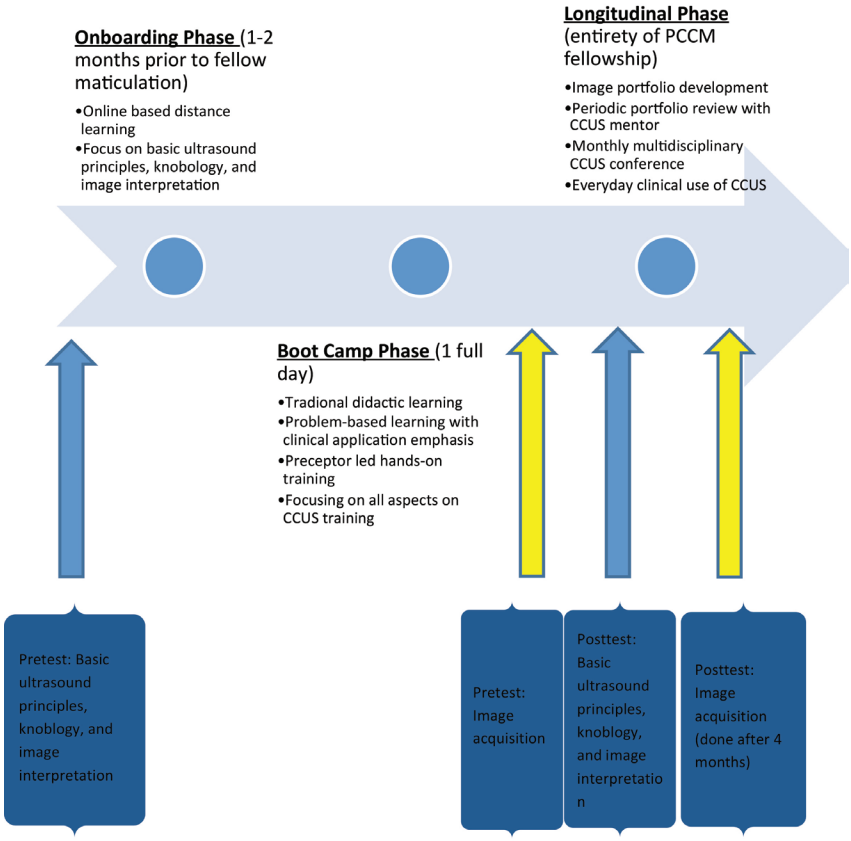
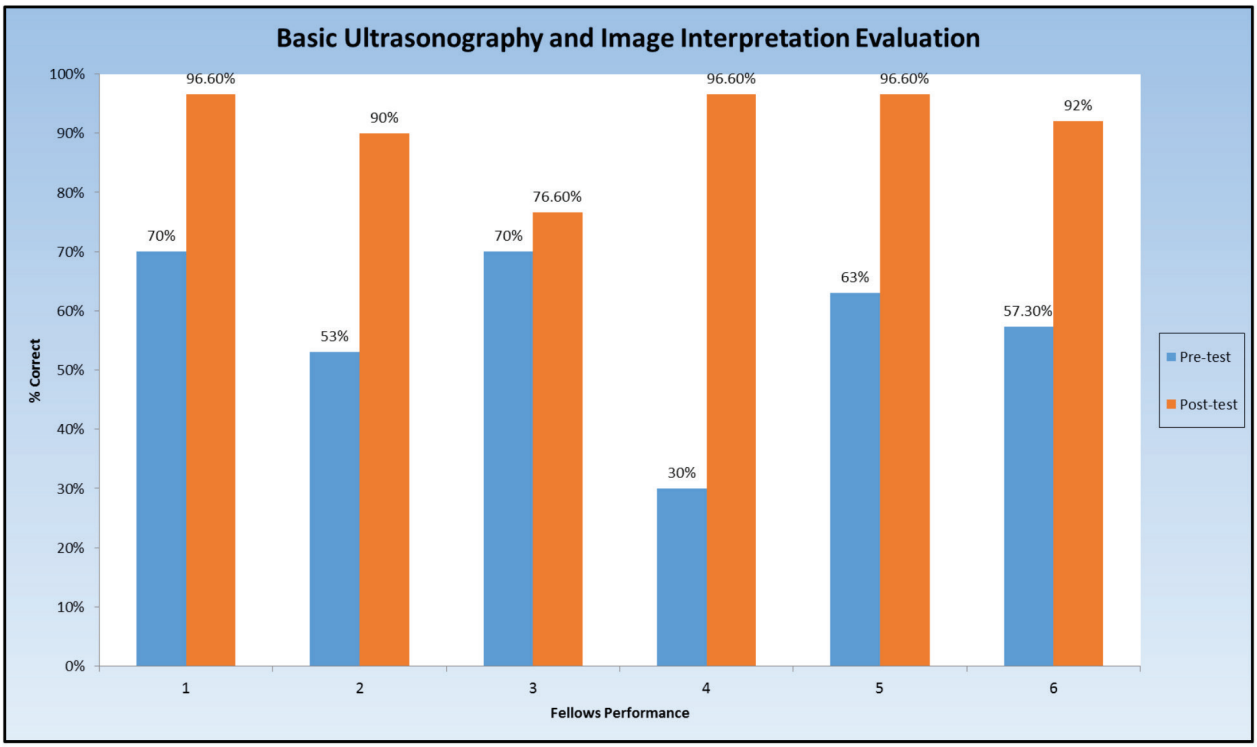


FIGURE 2: FELLOW PERFORMANCE ON BASIC ULTRASONOGRAPHY AND IMAGE INTERPRETATION DOMAINS



Eastern Virginia Medical School

Norfolk, VA

Implementation of a Multifaceted Faculty Development Program

Abstract Authors: Joshua Sill, MD; Michael Hooper, MD; Heather Newton, EdD; Agatha Parks-Savage, RN, EdD
Program Director: Joshua Sill, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

The Accreditation Council for Graduate Medical Education (ACGME) stipulates that all internal medicine residency programs and subspecialty fellowship programs must monitor and track faculty development. The ACGME places specific emphasis on this topic, requiring periodic evaluations of faculty development curricula as part of the ongoing self-study process and annual program evaluations. Challenges to faculty development include limited faculty time, discordant participant schedules, and the resources required for administration of the program. Eastern Virginia Medical School implemented a new pulmonary and critical care fellowship program in the spring of 2014. In keeping with ACGME policy, we developed a faculty development program for the fellowship's faculty members. We present our experience with the development of a new, multifaceted faculty development program.

METHODS

In developing our program's faculty development curriculum, we sought to maximize opportunities for collaboration with our core residency program and with the sponsoring institution. Doing so, allowed us to focus our resources on items that were specific to our subspecialty, rather than duplicating the efforts of others. Our curriculum included several different types of activities. 1) Concise, online, computer-based training modules were developed with assistance from the sponsoring institution. 2) Brief talks and small group discussions were presented by different faculty members at the beginning of monthly faculty meetings. 3) Highlights from the minutes of the Graduate Medical Education Council meeting were emailed to faculty members monthly for review. 4) Faculty members were encouraged to attend national educational meetings or educational sessions at national subspecialty meetings. 5) Faculty were encouraged to attend an ongoing faculty development lecture series provided by the sponsoring institution.

RESULTS

Overall feedback from faculty members was positive. They found the curriculum to be helpful and not overly time consuming. Having required items either coincide with previously scheduled meetings or be available in a short, self-directed, online format was appreciated by faculty members. The site visitors during a recent ACGME lauded the faculty development program, stating that it was in keeping with "best educational practices."

CONCLUSIONS

Faculty development is an important part of any ACGME-approved internal medicine subspecialty fellowship program. Working within the framework of pre-existing institutional and core residency curricula may help to make the process more efficient. Limiting the time requirements imposed on the faculty members may help improve faculty participation.

REFERENCES

Philibert I, Lieh-Lai M. A practical guide to the ACGME self-study. Journal of Graduate Medical Education. September 2014; 612-614.
Acknowledgements Linda Archer, PhD, Vice Dean for GME, Designated Institutional Official, Eastern Virginia Medical School Chrisandra Knight, Program Coordinator, Pulmonary and Critical Care Medicine Fellowship Program, Eastern Virginia Medical School Elza Mylona, PhD, MBA, Vice Dean for Faculty Affairs and Professional Development, Eastern Virginia Medical School

Mount Sinai St. Luke's-West-ICAHN School of Medicine

New York, NY

Teaching Skills of Quality Improvement in a Pulmonary & Critical Care Fellowship: A Team Project in the Ambulatory Setting

Abstract Authors: Edwardine Mirna Mohanraj, MD; Steven Chakupurakal, MD; and Janet Shapiro, MD
Program Director: Edwardine Mirna Mohanraj, MD
Type of Program: Pulmonary/Critical Care

RATIONALE

Improvement in patient outcomes and reduction in medical errors are the focus of healthcare institutions. Fellows entering subspecialty fields are charged with 'improving the quality and safety of healthcare at both the individual and systems levels'. Few resources exist to aid in the design of feasible and sustainable curricula in quality and safety. We developed a novel, longitudinal curriculum in quality improvement for subspecialty fellows centered on an annual team project in the ambulatory setting. The aims were to teach principles of quality improvement and safety, promote trainee monitoring of practice improvement, implement process improvements, and foster teamwork and leadership skills. The team project provided a framework for fellows to achieve competence in practice-based learning and improvement and systems-based practice.

METHODS

The longitudinal QI curriculum consists of 4 distinct elements: completion of the Institute for Healthcare Improvement Basic Certificate in Quality and Safety (year 1), participation in departmental and divisional QI committees and initiatives (years 2-3), development and leadership of individual QI projects (years 2-3) and participation in an annual group QI project (all years). 9 Pulmonary & Critical Care fellows worked jointly on this project under faculty supervision. The fellows identified a practice gap: patients with high-risk indeterminate pulmonary nodules had inconsistent surveillance imaging. Fellows elected to improve the process for timely radiographic monitoring. The project began with instruction on tools of quality improvement. Senior fellows led three subgroups: mission statement, process map, and data collection strategy. Progress was presented at bimonthly project meetings.

RESULTS

The 'mission statement' subgroup reviewed the pulmonary nodule literature and articulated the goal that 100% of patients with indeterminate nodules should undergo timely chest CT surveillance. The 'process map' subgroup elucidated the process for CT scan scheduling and identified multiple patient-based and systems-based roadblocks. All fellows reviewed their patient panels: 660 clinic visits over a three-month period. Baseline data revealed that only 80% (21/26) of ordered CT scans were actually scheduled. A process of stream-lining the appointment and authorization process was accomplished with interdisciplinary involvement of fellows, clinic staff and Radiology leadership. After implementation, 94% of ordered CT scans were scheduled (29/31); 68% of CT scans were actually completed. Faculty provided competency-based feedback to fellows in areas of safety, quality, and interprofessional teamwork. Feedback was utilized by the Clinical Competency Committee to inform milestones: SBP1, SBP2, SBP3, PBLI1, PBLI2, PROF2.

CONCLUSIONS

This fellow-directed team project was successful in teaching principles of quality work, leadership and teamwork. Fellows reflected on their practice, implemented system improvements and gained valuable skills applicable to future annual team projects and individual quality improvement endeavors. Evaluation of fellow participation provided meaningful data for ACGME-designated milestones. The team project – as part of a robust, longitudinal quality improvement curriculum – is readily reproducible in any medical training environment.

Mount Sinai St. Luke's-West-ICAHN School of Medicine

New York, NY

An Innovative, Longitudinal, Simulation-Based Medical Education Curriculum for Pulmonary and Critical Care Fellows

Abstract Authors: Mirna Mohanraj, MD; Susannah Kurtz, MD; Joseph Mathew, MD; Andre Sotelo, MD; Keith Rose, MD and Hassan Khouli, MD
Program Director: Edwardine Mirna Mohanraj, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Simulation-based medical education (SBME) can improve trainee competence in procedural skills, management of clinical scenarios, and team leadership. Scant resources exist to guide simulation curriculum design. We describe the development of an innovative longitudinal SBME curriculum for pulmonary and critical care fellows.

METHODS

The SBME curriculum was developed at the Center for Advanced Medical Simulation (CAMS) at Mount Sinai St. Luke's-West (MSSLW) and includes four components. The first component is an 'accelerated skills' course, conducted since 2014 for first-year fellows across three fellowship programs in the Mount Sinai Health System. Multi-site faculty lead fellows through task-training sessions in airway management, pleural procedures, and bronchoscopy. Additional components were subsequently implemented for fellows at the MSSLW site. The second component provides periodic training in procedures including advanced airway management, pleural procedures, medical code team training, and EBUS. Sessions are based on self-identified and faculty-identified fellow needs. The third component consists of rotating, biannual simulation of clinical scenarios. Several competencies are evaluated (medical knowledge, evidence-based decision-making, emergency resuscitation, communication, leadership) via advanced cases in pulmonary (ie poorly-controlled asthmatic) and critical care (ie postpartum pulmonary embolism). The fourth component is an innovative 6-month 'mini-simulation fellowship' offered to senior fellows with career aspirations as simulation-focused clinician educators. Fellows develop mastery level skills in several areas: design and programming of high-fidelity simulations; facilitation and debriefing of learners; simulation to reduce errors and improve patient outcomes. Fellows participate in group and independent simulation research activities. Fellows receive real-time debriefing and objective feedback via performance checklists and evaluator assessments. Mini-simulation fellows receive continuous feedback from mentoring faculty and present their research at academic meetings.

RESULTS

34 fellows have participated in the 'accelerated skills' course. Recent course evaluations were overwhelmingly positive with 100% of trainees agreeing that it would influence practice and should be repeated annually. All participants requested further advanced skills courses. Multisite participation leveraged faculty expertise and promoted camaraderie. At MSSLW, 9 fellows per year participate in periodic procedural training and biannual clinical scenarios. Our first fellow is currently enrolled in a 6-month 'mini-simulation fellowship'. We plan to objectively demonstrate the value of these curricular components and implement a 4th-year clinician educator track.

DISCUSSION

This SBME curriculum provides an innovative approach to meet educational objectives in a constructive environment. We expect that future measures will demonstrate tangible improvements in fellowship education and patient outcomes. Selected fellows will graduate with unique career development opportunities as clinician educators.

Mayo Clinic

Rochester, MN

An Innovative Continuity Clinic Pilot Study Featuring the 'Fellow of the Day'

Abstract Authors: Diana J. Kelm, MD; Joseph Skalski, MD; Kannan Ramar, MBBS, MD
Program Director: Kannan Ramar, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Pulmonary and Critical Care Medicine (PCCM) fellows at our institution are responsible for the longitudinal care of their continuity clinic patient panel. 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 continuity clinic, 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)".

METHODS

Our program has 3-4 fellows in the continuity clinic each half day. One fellow was assigned as the FOD and took responsibility to address patient care related messages or paperwork for any fellows away from their continuity clinic (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 to help serve the above responsibilities. The FOD role was studied over a 4-month period. 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 choose N/A for these questions were excluded in the analysis as they were not in the ICU during the time of this pilot study.

RESULTS

We surveyed multiple stakeholders about FOD including fellows, medical students rotating through clinic, and faculty. There were a total of 17 fellows in our PCCM fellowship program. Sixteen fellows (94% response rate) responded to the pre-FOD survey and 15 fellows (88% response rate) for the post-FOD survey. Table 1 highlights our results. Both medical students and fellows reported that FOD substantially improved the teaching experience: Nine (60%) fellows felt they were delayed in their continuity clinic when medical students were present before the FOD and only 1 (7%) felt delayed afterwards ($p=0.002$). After the FOD implementation, fellows were more likely to teach medical students (4.07 vs. 4.67, $p=0.007$). Medical students reported that they were more actively engaged in clinical patient care with the fellows ($p=0.02$) and enjoyed the teaching experience significantly post-FOD implementation ($p=0.004$). 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 after the FOD implementation. Thirteen fellows (87%) wanted to continue the FOD role at the end of the study period. The continuity clinic staff thought the FOD role was good for teaching, were satisfied

TABLE 1: RESULTS OF THE FELLOWS' SURVEY

	PRE-FOD	POST-FOD	MEAN DIFFERENCE	P VALUE
Teaching medical students[A]	4.07	4.67	0.6	0.007
Priority messages while in the ICU[A]	3.33	3	-0.33	0.62
Paperwork while in the ICU[B] (n=10)	1.8	1.1	-0.7	0.02
Come in on day off[B] (n=10)	1.8	1	-0.8	0.0002
Inbox messages while in the ICU[B] (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

DISCUSSION

The implementation of the FOD role was a huge success as it allowed PCCM fellows to have a more meaningful continuity clinic experience without disruption in clinic and ICU workflow, and improved the medical students' teaching and clinical experience in the continuity clinic

Mount Sinai Beth Israel

New York, NY

A Mastery-Learning Model for Longitudinal Critical Care Ultrasound Training using an Online Archiving and Feedback System

Abstract Authors: Angela Love, MD; Paru Patrawalla, MD
Program Director: Paru Patrawalla, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Point of care ultrasound is an essential tool with numerous applications in critical care medicine for bedside diagnosis and procedure-guidance. International societies have published the skills required for competency and the recommended training standards for critical care ultrasound (CCUS), which include continued supervised practice after introductory training[1,2]. Competence in ultrasound-guided procedures and knowledge of CCUS are ACGME program requirements and entrustable professional activities. However, many fellowship programs have insufficient faculty or resources to develop a competency-based curriculum in CCUS. In a study by Eisen et al., 90 program directors across the country were surveyed, it was reported that 40% of programs lacked faculty proficient in performing ultrasound[3]. Most published studies on CCUS curriculums describe introductory courses without ongoing evaluation of skill acquisition to competency. We describe a mastery-learning model for critical care ultrasound following a comprehensive introductory course using a quality review and feedback process for fellow-performed ultrasound exams.

METHODS

As part of the fellowship ultrasound curriculum, all first year fellows attend an intensive regional 3-day ultrasound course with direct hands-on learning and didactics on vascular, lung, abdominal ultrasound and basic echo. During fellowship, monthly didactics and case-based ultrasound conferences build on knowledge and image interpretation skills. In addition, day-to-day practice involves a blended feedback process of direct supervision by ultrasound-training faculty on clinical rotations and indirect feedback via Q-path, an online repository of ultrasound exams. The fellows archive all performed ultrasound exams in Q-path, complete detailed worksheets on their interpretation and application to the patient, and then submit to ultrasound-trained faculty for review and written feedback on image quality and interpretation. Minimal quality metrics need to be met on each submitted exam. Clinical decisions are made with supervision from clinical faculty. This model provides deliberate practice, with tailored feedback to each fellow to allow growth towards mastery of CCUS at an individual pace.

RESULTS

In order to meet ultrasound proficiency standards, training must extend beyond initial training of fellows to include continued supervised practice throughout fellowship until mastery standards are met. We expect that fellows will demonstrate improved skill retention with continued written feedback on image quality and interpretation. This strategy will also provide graduating fellows a portfolio of ultrasound exams to confirm competency and assist in hospital credentialing. On average about 120 exams are performed each month by the 9 fellows in the program. We will be collecting data on the completed worksheets and fellow feedback regarding usefulness and confidence associated with written feedback to confirm expectations.

DISCUSSION

A multimodality, mastery-learning model for CCUS training is feasible and effective in pulmonary and critical care medicine fellowship programs. With few faculty proficient nationwide in critical care ultrasound, an archived ultrasound and written feedback system is an efficient method to provide detailed and specific feedback to fellows.

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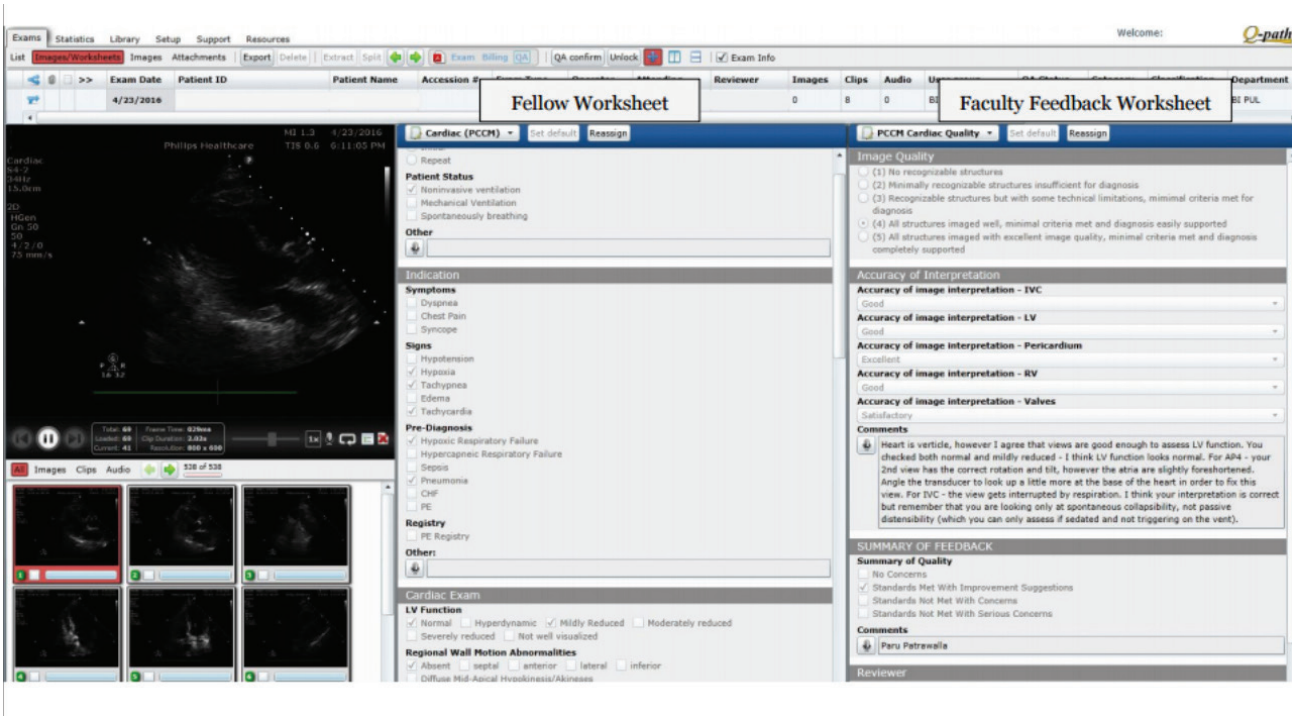


New York University School of Medicine

New York, NY

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

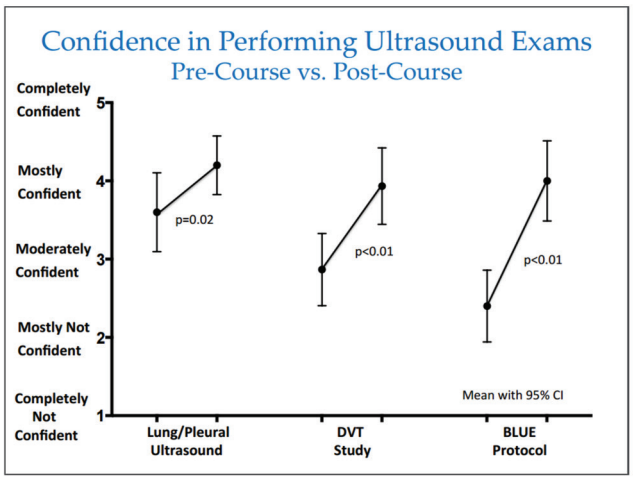
Abstract Authors: Deepak Pradhan, MD, FCCP; Vikramjit Mukherjee, MD, MBBS; Bishoy Zakhary, MD; Harald Sauthoff, MD
Program Director: Doreen Addrizzo-Harris, MD, FCCP
Type of Program: Pulmonary/Critical Care Medicine Fellowship

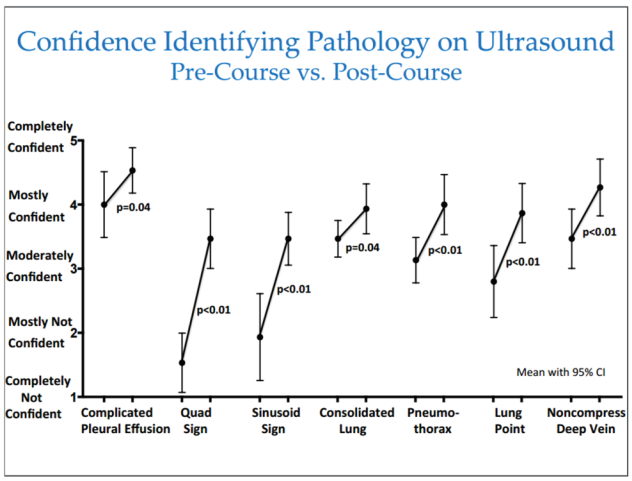
BACKGROUND

Acute respiratory failure is a ubiquitous problem resulting in nearly 2 million yearly hospitalizations in the United States, and is associated with 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 are not capitalizing on this effective modality, in part due to lack of competency in performing the BLUE protocol. Effective courses designed to teach ultrasound evaluation of acute respiratory failure are lacking. We present a novel one-day course with a blended learning design to instruct learners to correctly and rapidly apply ultrasound for assessment of acute respiratory failure.

METHODS

All learners completed a pre- and post-course survey recording learner characteristics, confidence on a 5-point Likert scale for performing relevant ultrasound exams for acute respiratory failure, confidence identifying relevant pathology on ultrasound, and effectiveness of different course components. All learners also completed a pre- and post-test 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 after each case. 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 Wilcoxon matched-pairs signed rank testing was used for statistical analyses.





RESULTS

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) pre-test score was 40 (25-55)% and median (IQR) post-test score 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

A 1-day blended learning design course comprised of didactic and case-based lectures, small group hands-on sessions, and simulated case assessments 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.

Northwestern University Feinberg School of Medicine

Chicago, IL

Implementation of an Integrated Research and Clinical Conference at an Academic Pulmonary and Critical Care Medicine Program

Abstract Authors: James M. Walter, MD; Jaqueline M. Kruser, MD; Paul Reyfman, MD; Peter H. S. Sporn, MD
Program Director: Peter H. S. Sporn, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Academic Pulmonary and Critical Care Medicine (PCCM) fellowship programs are responsible for identifying and supporting trainees interested in research careers.[1] To achieve this goal, programs must introduce clinical fellows to available research projects and mentors.[2] This can be challenging given the time constraints of clinical rotations and required didactics during the first year of training. To respond to this challenge, we restructured our weekly PCCM "Grand Rounds" conference to better emphasize the connection between our division's research and clinical activities and to highlight research opportunities for junior fellows.

METHODS

Three Wednesdays per month, clinical fellows and faculty in the Division of PCCM meet for "Grand Rounds." Traditionally, this conference has consisted of two 30-minute clinically oriented presentations given by fellows. This year, fellows have been paired with a faculty member engaged in research and encouraged to collaborate on a theme for their presentations. Faculty members are asked to emphasize the clinical implications of their research while the fellow is encouraged to cover a related clinical topic and highlight opportunities for scientific discovery. As an example, a senior faculty member discussed his work investigating the link between alveolar macrophage heterogeneity and age-related lung disease. This was paired with a talk by a clinical fellow on emerging therapies for viral pneumonia in the elderly. To evaluate this change in format, fellows and faculty in the division were sent a 5-question, web-based satisfaction survey. All questions utilized a 5-point Likert scale.

RESULTS

Satisfaction scores after the first 8 conferences were obtained from 24 clinical fellows and faculty (5=best; mean ± SEM): "the paired lectures provide a valuable introduction to our division's research activities," 4.1 +/- 0.2; "the paired lectures help emphasize the clinical implications of our division's basic and transitional research," 3.5 +/- 0.2; "the paired lectures have been useful to identify potential research mentors and collaborators," 3.4 +/- 0.2; "the paired lectures help emphasize areas of uncertainty in clinical medicine," 3.8 +/- 0.2; "the paired lectures have been a valuable addition to the fellowship didactic curriculum," 3.6 +/- 0.3.

DISCUSSION

Implementation of an integrated research and clinical conference at an academic PCCM program is feasible. Clinical fellows and faculty find that this format provides a valuable introduction to the division's ongoing research activities. Further efforts are needed to emphasize the clinical implications of basic and translational research and to help fellows identify potential research mentors and projects early in training.

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Perelman School of Medicine at the University of Pennsylvania

Philadelphia, PA

Longitudinal Career Development Curriculum for Pulmonary-Critical Care Fellows

Abstract Authors: Joshua M. Diamond, MD; Michael G. Shashaty, MD; Meeta P. Kerlin, MD; Nilam S. Mangalmurti, MD; Michael F. Beers, MD; and Maryl Kreider, MD
Program Director: Maryl Kreider, MD
Type of Program: Pulmonary/Critical Care Fellowship Training Program

BACKGROUND

The goal of academic pulmonary-critical care fellowship programs is to produce highly qualified, well trained, well rounded academic clinicians and physician-scientists. Unfortunately, the process of transitioning from fellowship to attending is often one of the most stressful and unsettling transitions of a trainee's career. Attempts at exposing fellows to attending physicians in a wide variety of clinical roles can be overwhelming, especially to trainees early in the fellowship process. In order to improve fellows comfort with planning for future careers in pulmonary-critical care medicine and better prepare them for life after fellowship, we have developed a longitudinal career development experience that begins in the first fellowship year.

METHODS

Prior to July 2015, our program utilized monthly small group sessions with rotating faculty members to expose all fellows to the following career paths: basic science or clinical research, industry, private practice, and university-based clinical roles. Both formal evaluations and informal feedback highlighted that lack of practical, "how to" information made this program inadequate for supporting the fellow-to-faculty transition. In July 2015, we implemented a longitudinal educational program providing fellows with focused guidance, targeted to their year of training, in how to use the fellowship years to transition successfully at the end of training. In the summer of their first fellowship year, we help fellows to identify their interests in pursuing one of three training pathways: basic science research, clinical-translational research (including epidemiology and health-services research), or clinical education, with a focus on education, safety, and quality improvement. During a 2-day scholarship retreat, during which they are freed from clinical responsibilities, fellows participate in structured workshops regarding training pathways and one-on-one meetings with potential content and/or career mentors. Follow-up meetings are then set up based on individualized need. During the subsequent fellowship years, focused half-day workshops are organized around two themes: 1) Developing a research career, and 2) Getting a job. Each workshop includes faculty panels for fellows to learn about how career pathways match up with their own interests. Additionally, structured training is provided on practical aspects. For the research workshop, topics include how to be a good mentee, timing grant submissions to best enable the faculty transition, preparing fellowship and career development grants, and understanding the NIH study section review process. For the job workshop, topics include developing a national reputation, starting a job search, writing a cover letter, interviewing techniques, and achieving work-life balance.

RESULTS

Qualitative evaluations of our pre-2015 career development series revealed that sessions were "anxiety provoking", "overwhelming for first year fellows", and insufficiently focused enough on topics of interest. Fellows desired sessions in which "faculty should get across key points, or set a framework and then allow for questions." While we have just begun to collect information on the impact of the longitudinal program, preliminary feedback has been overwhelmingly positive. Fellows rated the Getting a Job Workshop very highly, with the majority of responders agreeing or strongly agreeing that the small group sessions were helpful. Fellows felt that the format and content was "very insightful and practical". Fellows described a need for separate basic science oriented sessions for trainees given the specific needs inherent in such a job.

DISCUSSION

We have developed a longitudinal career development mentoring curriculum for fellows beginning in the first year of fellowship that targets

the individualized needs of fellows throughout their training. In the later fellowship years, this curriculum is specifically tailored to choosing a career track and taking practical steps to transition to such a career.

More fellow derived feedback is needed to assess the impact of our efforts on facilitating the transition from fellow to attending.

TABLE 1: ORGANIZATION/TIMELINE OF CURRENT CAREER DEVELOPMENT CURRICULUM

First Year of Fellowship		
Timing	**Intervention**	**Content**
Summer (July-August)	One-on-one meetings between Fellowship Director of Clinical Research or Basic Science Research Training with trainees	1. Identification of career interest, including clinical and research focus 2. Identification of potential research and career mentors
Early Fall (September)	Two-day Research Retreat for 1st year fellows	1. Introduction to the research training pathways at Penn: a. Master's degree programs (MSCE, MSHP, MTR) b. Basic science focus c. Clinician educator 2. Meetings with previously identified potential mentors
Fall	Repeat one-on-one meetings between Fellowship Director of Clinical Research or Basic Science Research Training with trainees	1. Review of retreat experience 2. Development of plan for the upcoming research fellowship period
Upper Years of Fellowship		
Timing	**Intervention**	**Content**
Biannually (Fall and Spring)	Half-day Job Workshop	1. What Division Chiefs are looking for, including how to write a cover letter 2. Developing a national reputation 3. Utilizing Division resources for the job search process 4. Achieving work-life balance
	Half-day Developing a Research Career Workshop	1. Grant writing 2. Timing and type of grant submissions 3. Make-up of NIH study section 4. How to be an effective mentee

MSCE: Master of Science in Clinical Epidemiology

MSHP: Master of Science in Health Policy Research

MTR: Master of Science in Translation Research

Rush University Medical Center

Chicago, IL

Development, Implementation, and Maintenance of a Comprehensive Palliative Care Curriculum for Pulmonary and Critical Care Fellows

Abstract Authors: Elaine Chen, MD; Betty Tran, MD, Amie Gamino, MD.
Program Director: Betty Tran, MD
Type of Program: Pulmonary/Critical Care

BACKGROUND

Mortality in the intensive care unit (ICU) ranges from 5-40%. Palliative care (PC) curricula have been recommended for all critical care fellows, yet they are neither standard nor required in most pulmonary and critical care training programs. Research has shown that critical care fellows are inadequately trained in palliative and end-of-life care, and that implementation of a PC curriculum has a positive impact on fellows' attitudes and knowledge. Important benefits to PC education include improving communication with patients and families and thus improving satisfaction, as well as decreasing burnout and improving job satisfaction. Despite cited benefits, such programs have proven difficult to sustain and maintain. PC education has been limited in Pulmonary and Critical Care (Pulm/CC) Fellowship Programs and can be improved. Addition of a formal PC curriculum within a Pulm/CC Fellowship has potential to improve patient care, family satisfaction, communication in the ICU, trainee perception of end-of-life care, trainee knowledge of PC, and to decrease burnout.

METHODS

A mandatory 2-week PC clinical rotation was introduced for second-year fellows, including a series of online self-study modules, 8-10 clinical days rotating on a hospital-based inpatient palliative care consult service with palliative care attending physicians, and 2 clinical days rotating on an independent inpatient hospice and palliative care unit. A monthly one hour PC Conference in the Division of Pulm/CC was initiated, with required attendance for fellows and optional attendance for faculty. The conference includes a time of bereavement and debriefing of difficult emotional cases, as well as an interactive educational discussion session relevant to both PC and Pulm/CC. Fellows take an active role in preparing the monthly bereavement list. The educational session is facilitated by faculty in Pulmonary and Critical Care Medicine and/or Palliative Medicine, with occasional guest facilitators from various disciplines. Topics are selected to encompass a broad range of palliative care domains, including (1) patient and family communication; (2) pain and symptom management in those who are seriously ill or dying; (3) quality of life focus; (4) coordination of care; and (5) interdisciplinary team involvement.

RESULTS

In the three years since its inception, conference attendance remains high with at least 2/3 of fellows present at each meeting. Interest in topics for discussion varies. Qualitative feedback regarding the curriculum, both the clinical rotation as well as the conference, is positive. Fellows report benefiting from both the didactic aspect of the conference as well as the humanistic benefits of reflecting on mortalities and difficult cases. Topics for discussion continue to be refined and developed based on attendee feedback, with some topics repeated annually due to their importance and relevance, and some topics on a rotation schedule to be repeated every second or third year. A comprehensive curriculum guide with attendee handouts and leader guides that include relevant teaching pearls and literature references is being developed for dissemination.

DISCUSSION

PC is an important aspect of Pulm/CC fellowship training. It is feasible to implement a new PC curriculum for Pulm/CC fellows that includes a rotation and conferences. The curriculum continues to stimulate interest in PC issues and improve trainee morale among the Pulm/CC fellows. Maintenance of such a curriculum requires an educational champion for PC in Pulm/CC.

FIGURE 1: PALLIATIVE CARE CONFERENCE FOR PULMONARY AND CRITICAL CARE

TOPIC: Negotiating conflict at the end of life

Format: Reflection, discussion, case discussion

INTRODUCTION

Think of a case or two when there was conflict between two parties in a patient who was critically and/or terminally ill. Which two parties? Can be between medical teams, between physicians, between disciplines, between health care providers and patients, health care providers and families, patients and families, among family members… any other possibilities? Jot down a few notes and be prepared to discuss.

OBJECTIVES

- Describe types of conflicts that can arise at the end-of-life
- List approaches to resolving disputes
- Discuss techniques to manage your own emotions in the face of conflict

CASE *See below*

QUESTIONS FOR DISCUSSION

1. Ask attendees to describe the cases that the introduction brought to mind
2. Which conflicts were the most challenging?
3. How did you approach the conflicts?
4. What worked? What didn't work? What could have been done better? What was done well?
5. How did it make you feel?

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CLINICAL SCENARIO: 73 y/o M who was transferred from OSH ED 3 days ago after suffering a seizure at home. He was intubated in the field for airway protection, and had a witnessed aspiration event during intubation. The patient was loaded with Dilantin at the OSH, where he had a CT of the head which revealed increased edema surrounding pre-existing brain metastases. The patient was placed on decadron and transferred to our MICU. He has had no further seizures, but his chest x-ray, which initially revealed a large left sub-hilar mass and bibasilar atelectasis vs pneumonia, reveals worsening airspace infiltrates in both lower lobes, worse on the left. He is on Volume Control with rate of 24, Vt of 475, and PEEP of 10. His FiO2 was increased from 0.60 to 0.80 the previous night due to SpO2's of 89-90%. His MAP is 50-60 on a moderate dose of norepi.

He has a history of non-small-cell lung cancer diagnosed 6 months ago, initially stage IIIB. He had chemo and radiation therapy and had severe side effects, including an episode of acute tubular necrosis due to dehydration from vomiting and poor intake due to radiation esophagitis, requiring a stay in the ICU and CVVH. He had recovery of renal function and went home, declining further treatment for his cancer. One month ago, a surveillance CT revealed bone and brain metastases.

He has an advance directive.

You are about to enter a meeting with the patient's daughter. She is the patient's surrogate decision maker and is very close with him. She met with the previous attending on his first day in the ICU, and at that time the decision was made to wait for more information and obtain a consultation from oncology regarding the patient's prognosis with respect to his cancer. When patient's status worsened the previous night, the resident called her and asked her to come in the next day for a meeting with the attending to discuss "the big picture."

Why do conflicts arise?

- Most family and care team conflicts hinge on missed opportunities to communicate
- When alliance between physicians and families breaks, lose faith and trust
- If team members have different views, families solicit different viewpoints

Leave your emotions at the door

- Countertransference:
  - Professionals' personal anger and frustration can influence responses in conflicts over "futility"
  - When providers' feelings break through (insecurity, need for approval, defensiveness)
  - Self-awareness is paramount

Negotiation approach to resolving disputes

- Separate people from the problem: shift away from emotion
- Focus on interests rather than positions: don't just aim to "Get the DNR"
- Generate a variety of options before settling on agreement
- Insist that agreement be based on objective criteria
- Channel actions toward common interests and away from personalities and emotion

University of Kansas Medical Center; University of Colorado; University of Wisconsin; University of Iowa; University of New Mexico; Rush University

Kansas City, KS

Multi-Institution Cooperative Ultrasound Program for Midwest Critical Care Fellowships

Abstract Authors: Lewis Satterwhite, MD; Tristan Huie, MD; Ken Ly-Kew, MD; Piere Kory MD, MPH; Michele Boivin, MD; Carl Kaplan, MD; and Greg Schmidt, MD
Program Director: Heath Latham, MD
Type of Program:

BACKGROUND

Point of Care Ultrasound has a growing evidence base for best practice in Critical Care. While official ACGME requirements surrounding US remain narrow, many fellows and fellowship programs are seeking methods for improved efficiency in teaching this evolving field. A group of educators skilled in Point of Care Ultrasound application combined to teach 46 fellows from many programs across 7 states during a 2 day symposium hosted at the University of Iowa in Iowa City. The curriculum included cardiac, pulmonary, pleural, vascular and abdominal applications. This was the 4th Annual Midwest Point of Care Ultrasound Symposium. It has grown each year, reaching more fellows and more programs each year.

METHODS

A two day US curriculum involving lectures, hands-on US scanning with live models and image interpretation with extensive Critical care pathology was delivered to Fellows from across the Midwest at the University of Iowa on July 14-15, 2016. A pre-test knowledge assessment and survey of interest and aptitude was obtained. After the course, a post-course knowledge assessment was also completed.

RESULTS

46 trainee / learners participated with 8 symposium faculty members. In the pre-test, 59% of the questions were answered correctly. In the post-test, 83% of the questions were answered correctly (p value < 0.05 using the paired T test). Survey results demonstrated that pre-course there was a strong belief that Critical Care Ultrasound was important and this remained consistent in the post-course assessment. Fellows had a low to moderate confidence in their ability to obtain and interpret images prior to the course. This confidence improved after course. The performance on the knowledge based test was variable prior to the course and this improved. There was a low to moderate level of prior experience with ultrasound before the course. Fellows reported concern that local lack of equipment or local champions to assist with consolidation of learning may impair further development of Point of Care Ultrasound knowledge and skill development.

DISCUSSION

Shared resources across multiple institutions allowed training of a very high number of fellows from a geographically diverse area. Fellows report a high level of interest in learning this material. Our data concur with previous reports that knowledge can improve with a short high intensity curriculum. Other variables such as local expertise and equipment availability need to be addressed to ensure that knowledge and skills gained can be consolidated and extended. Further research could help to determine if local characteristics such as equipment, faculty expertise and existence of a formal curriculum can predict if fellows are able to retain or improve knowledge and skills throughout a multi-year training program.

University of Toronto

Toronto, Ontario

The "Ghost Review" Project: Self-regulated Professional Development Activity to Improve Peer Review Skills amongst Early Career Researchers

Abstract Authors: Jatinder K Juss, MD, PhD, MRCP, FRCP; Pierre-Alexis Lépine, MD; Jacob Ninan, MD; Alexander Mackay, MD and Alberto Goffi, MD
Program Director: Laurent Brochard, MD
Type of Program: Critical Care

BACKGROUND

The ability to objectively and thoroughly critique primary scientific literature is vital to the peer review process and a fundamental professional skill for all early career researchers to develop. Peer review is a cardinal function of the scientific community to ensure that significant limitations about study design, observations and conclusions are addressed prior to publication. Despite its critical importance, many junior investigators receive little, or no, explicit training in the appraisal of manuscripts.

METHODS

Literature on developing peer review and scientific literacy skills of early career researchers is limited. The objective of the current study is to determine (1) the perception, attitudes and experience of American Thoracic Society early career researchers of their scientific literacy skills and ability to review scientific manuscripts and (2) if undertaking a self-regulated professional "ghost" review activity is an effective means of enhancing early career researchers' review performance.

RESULTS

ATS early career researchers (n=50) enrolled in the study will be asked to evaluate and provide effective feedback for the original submission of five consecutive scientific research articles published in the American Journal of Respiratory and Critical Care Medicine (AJRCCM) within the previous three years. On completion of each article review, participants will immediately be supplied the original comments from AJRCCM peer reviewers for self-assessment of their review performance. Primary outcome of the study will be an assessment of improvement in quality of the early career researchers' reviews, as measured by a review assessment tool developed according to existing literature on quality of review process. The first and last article reviews will be independently scored by two investigators to determine changes in review performance during the self-regulated activity. Participants will also be asked to self-assess their skills and knowledge related to scientific literacy through surveys administered before and after the enrollment in the self-regulated Ghost Review professional development activity. We will use a pre-/post-activity comparative design to examine changes in participants' perceptions over time through a self-rating survey. Seven to ten survey items related to the peer review process were constructed based on previous experience using the primary literature as a teaching tool to assess the impact of the self-assessment ghost review activity. Participants will rate themselves using a Likert-type 5-point rating scale (where 1= Not at all confident and 5= Extremely confident), scores on the survey items will be summed to form a composite self-rating score. Results: This study has just started and will be fully complete and analyzed by February 2017 in anticipation of the ATS Meeting.

Winthrop University Hospital

Mineola, NY

Improvement in Chest Radiograph Interpretation Through the Development of a Formal Curriculum

Abstract Authors: John Bishara, Do; Irene Sher, MD; Claudia Halaby, MD; and Melodi Pirzada, MD
Program Director: Melodi Pirzada, MD
Type of Program: Pediatric Pulmonary

BACKGROUND

Currently, radiology is not a required rotation for pediatric residents as part of their curriculum for residency under the Accreditation Council for Graduate Medical Education (ACGME). Residency programs do offer electives in radiology; while other programs, pediatric residents rotate in radiology as part of their curriculum. A formal radiology curriculum by a trained radiologist will increase residents' ability to interpret pediatric chest radiographs. In this study, a formal educational curriculum was formulated through lectures to improve pediatric residents' interpretation of chest radiograph in addition to the current format. The formal curriculum involved two formal radiology lectures from the pediatric radiologist during their didactic conferences lasting one hour long and given one week apart. Informal radiologic instruction and inpatient pediatric radiology rounds were continued. Assessment of improvement was done by a test given prior to the start of the formal curriculum and two months after the formal curriculum lectures were given to the pediatric residents.

METHODS

Retention of knowledge was evaluated by a retention test was done three months after the formal curriculum. Sixteen out of 36 residents (44%) attended two formal lectures, seven were PGY-1, seven were PGY-2 and two were PGY-3 residents. The median change in score for those 16 residents who attended both formal lectures was 3 points with an interquartile range (IQR) of 2.5 to 4 points (p-value = 0.0002). Fourteen residents attended one formal lecture their median change in score were 2.5 points with an IQR of 1 - 4 points (p-value = 0.001). Six residents did not attend any lectures their median change in score was 1.5 points with an IQR of 0 - 2 points (p-value = 0.125). Residents who missed both radiology lecture had a median change in retention score of 0.5 points with an IQR of 0.0 - 1 point. Residents who attended one radiology lecture had a median change in retention score of 1.5 points with an IQR of -2.0 - 2.0 points. Residents who attended both radiology lecture had a median change in retention score of 0 points with an IQR of -1.75 - 1 point.

RESULTS

The change in score in all three groups in the retention test was not significant. Informal radiology teaching and inpatient radiology rounds take place frequently at our institution; however pediatric residents' chest radiograph interpretation skills can be improved more. We highlight that there is an association to better chest radiograph interpretations with a formal curriculum. Formal didactic lecture curriculum not only enhance the education of pediatric residents, but can be used with any other medical specialty, and has been started in our pediatric pulmonary fellowship.

FIGURE 1

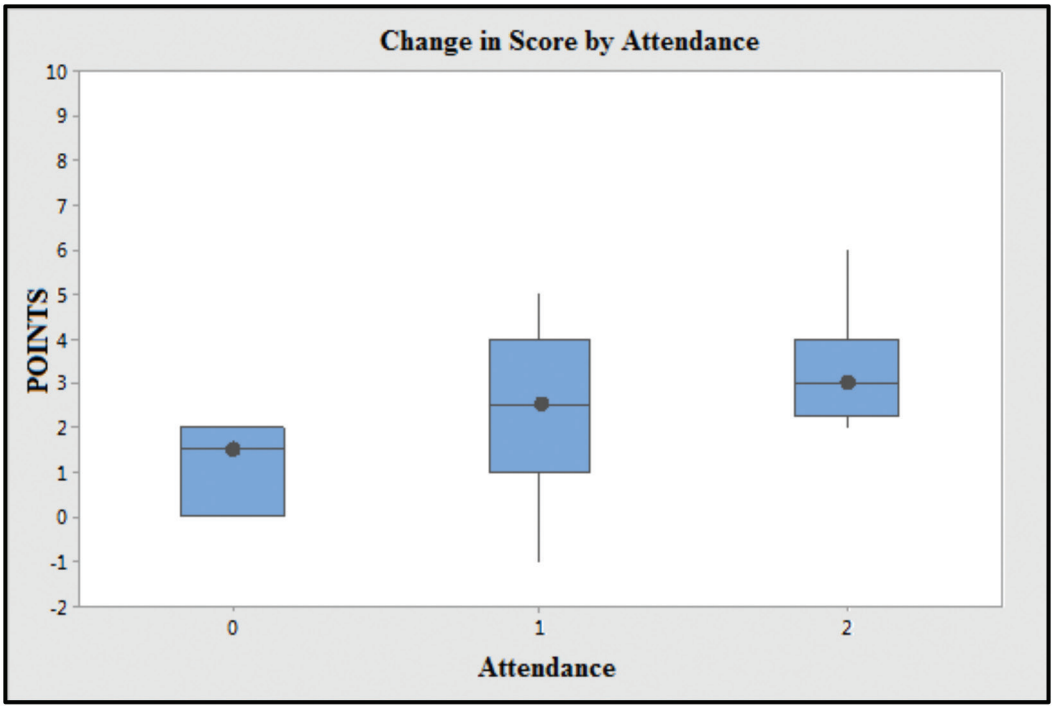
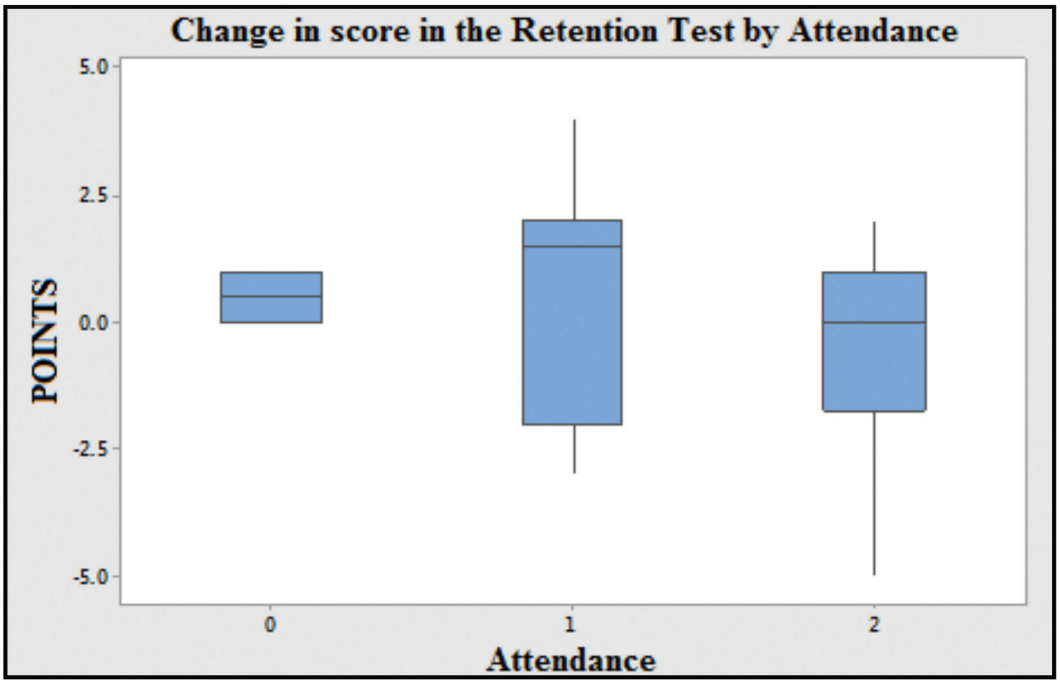


FIGURE 2



TOP UPDATED ABSTRACT: 2017 INNOVATION WINNER!

University of Arizona

Advanced Airway Management in Critical Care Fellowship Training: Curriculum Adjustment Aimed at Improving Patient Outcomes

Abstract Authors: Kareem Ahmad, MD; Bhupinder Natt, MD; Joshua Malo, MD; James Knepler, MD; Linda Snyder, MD; Kenneth Knox,MD; Jarrod Mosier, MD

2015 Abstract: http://www.thoracic.org/professionals/career-development/fellows/innovations-in-fellowship-education/2015/university-of-arizona-medical-center.php

BACKGROUND

Tracheal intubation is a commonly performed, high-risk procedure in the intensive care unit and presents unique challenges for an operator of any skill level. Thus, it is of utmost importance that fellowship programs train the future intensivist to provide optimal airway management. Trainees need to be exposed to and prepared for every scenario, possess the ability to rapidly recognize potential difficulties, and utilize the skill and knowledge to overcome each situation. Previously, we reported our experience with the establishment of an 11-month simulation-based curriculum focusing on providing trainees an easily modifiable and challenging set of scenarios. After 18 months, 16 fellows had completed the curriculum, notably improving our program's first attempt success (FAS) rates, decreasing complication rates, and raising trainee knowledge, based on objective testing, compared to the 18-month period immediately prior. Now in it's third year, the curriculum continues to be the cornerstone of our program's airway management training. Yet, it has also become a platform for improving patient outcomes and serves as a greater resource for critical care airway management research.

METHODS

We conducted a prospective observational study of patients intubated in our academic medical critical care unit between January 1, 2012 and January 1, 2016. Using a detailed form completed by each operator, we assessed multiple aspects of airway management including: method of intubation, device(s) used, attempts made, operator and patient demographics, difficult airway characteristics, and complications (eg. desaturation > 10%, esophageal intubation, hypotension, etc.). This time period is marked by the initiation of our previously described airway management curriculum in July 2013. Data are reviewed yearly, allowing focused modification of our curriculum and divisional practice patterns.

RESULTS

More than 1200 consecutive intubations occurred over the four-year period. FAS has increased by 30% each year (OR 1.30 per year, 95%CI 1.14-1.19), as well as the use of video laryngoscopy (VL) (OR= 1.74 per year, 95%CI 1.5-2.03) and the use of neuromuscular blocking agents (NMBA) (OR= 1.25 per year, 95%CI 1.11-1.41). These data show a marked reduction in the use of direct laryngoscopy with over 90% utilization of both VL and NMBA. Also, the most frequent complications noted in our study were desaturation (17%) and hypotension (8.3%). Trainees were further trained in additional pharmacologic interventions, preoxygenation techniques, and optimal patient positioning to reduce the risk of these complications. Over the last four years, the proportion of patients with at least one complication has decreased from 35% to 24%, which has become the major focus of the curriculum for the 2016-2017 academic year. Additionally, we have published several papers on our findings to benefit other providers outside of our institution. As of October 2016, we have produced 10 peer-reviewed publications and presented twenty-nine posters/ oral presentations at national or international meetings, all involving pulmonary and critical care trainees.

CONCLUSION

Our data show that over the four-year period, our airway management curriculum has resulted in a steady increase in the adoption of best practices, increasing first attempt success and reducing procedurally-related complications. In addition, our airway management program also serves as an academically productive resource for involving trainees in quality improvement and clinical research.

UPDATED ABSTRACT

Baylor College of Medicine

Five Year Evaluation of an Interactive Respiratory Therapy Curriculum in Pediatric Pulmonology Fellowship Training

Abstract Authors: Natalie Villafranco, MD, Julia B. Lawrence, RRT, Miesha Jolly, RRT, Lisa Traplena, RRT, Jennifer A. Rama, MD, Med
2016 abstract: http://www.thoracic.org/professionals/career-development/fellows/innovations-in-fellowship-education/2016/baylor-college-of-medicine.php

BACKGROUND

The Pediatric Pulmonology Fellowship Program at Baylor College of Medicine has been delivering an interactive Respiratory Therapy (RT) curriculum during orientation for five years. The purpose of this curriculum is to enhance skills and knowledge in: 1. oxygen delivery devices 2. spirometry 3. metered dose inhalers (MDI) and 4. airway clearance devices. This abstract describes the curriculum's five year process and outcomes evaluation and highlights Kolb's experiential learning theory as a framework for its success. In brief, the instructional design enabled the fellow to follow Kolb's four stages of learning: experiencing, reflecting, conceptualizing, and experimenting.

METHODS

Description needs assessment results informed the curriculum content and the basis of case-based scenarios. Initially, each fellow underwent a concrete experience by performing a skill such as providing inhaler instruction through role playing. This experience served as the pre-assessment and provided an opportunity for the fellow to reflect on his/her level of competence. Subsequently, an experienced RT delivered a didactic lecture and reviewed the cases which allowed the fellow to conceptualize new information. Finally, fellows had an opportunity to experiment with the different devices and apply their newly acquired knowledge and skills to new cases as part of the post-assessment. This intentional progression of events enabled the fellow to engage in effective learning. Assessment Fellows performed skills under direct observation of experienced RTs during pre- and post-assessments. The RT instructors completed itemized checklists to assess the fellow's performance. Evaluation Evaluation of the curriculum was done with individual tutorial and overall curriculum evaluation forms. To capture the impact on other stakeholders, the RT instructors were also given the opportunity to evaluate the curriculum through written and verbal comments.

RESULTS

Assessment results Over five years, 18 fellows participated in the curriculum. Using the Wilcoxon matched pair test, the median scores of providing proper instruction with inhalers and spacers, acapella, flutter, and threshold positive expiratory pressure devices were statistically higher during the post-assessment as compared to pre-assessment, $p<0.05$, $n= 18$. One year later, the median scores remained significantly improved compared to pre-assessment, $p<0.05$ $n=12$. Similarly, the median scores in the oxygen and spirometry stations were statistically higher during post-assessment as compared to pre-assessment, $p<0.05$, $n=18$. However after one year, though the median score change was positive, it was not statistically significant, $p>0.05$, $n=12, 8$. Probable reasons include less number of fellows in the one year follow-up analysis or less opportunity for clinical application and thus, less retention, as compared to the other stations. Process evaluation results Fellow rated highly many aspects of the program including its organization, content, and method of instruction. Feedback on scheduling led to consolidating the curriculum in fewer but longer days and having the RTs provide immediate feedback on fellow performance. Outcome evaluation results All 18 fellows completed the individual tutorial and overall curriculum evaluations. Data revealed a significant self-reported improvement in all learning objectives $p<0.05$. All fellows reported improving their skills and acquiring new knowledge in all four areas. Furthermore, all fellows indicated that they were highly satisfied with their instruction and that the curriculum should be offered yearly. The RT instructors reported that their participation enhanced their own interdisciplinary relationships and teaching skills.

CONCLUSION

A robust evaluation over five years demonstrates that this curriculum is valuable to both pulmonary fellows and RT instructors. The curriculum is being implemented as intended and is achieving its desired outcomes. It successfully fills a previous gap in training as well as strengthens interdisciplinary relationships. Instruction guided by Kolb's stages of learning explains why the curriculum has been a success.

UPDATED ABSTRACT

Children's Mercy Hospital

An Innovative Tool for Fellow Education and Recruitment

Abstract Authors: Jane B. Taylor MD MsCR and Dennis C. Stokes, MD MPH

2014 abstract: http://www.thoracic.org/professionals/career-development/fellows/innovations-in-fellowship-education/2014/university-of-tennessee-health-and-science-center.php

EDUCATIONAL STRATEGY

The goal of The Mississippi River Valley Pediatric Pulmonary Case Conference (MRVPC) is to provide young faculty and pediatric pulmonology fellows an exposure to oral presentations and aspects of peer-review critiques through discussions after their presentations. It is an internet-based case conference that occurs on the second Wednesday of each month from 12 to 1pm CST. The conference uses the WebEx software platform with telephone audio conferencing capability. 10 mid-western pediatric academic centers participate and present on an alternating schedule. Two cases are presented each month with subsequent group discussion from all participating centers after each case. Most of the presenters are pediatric pulmonology fellows and residents about to enter fellowship programs. The cases are recorded and archived on a website indexed by presenter and can be listed on the presenter's curriculum vitae. The conference discussion helps provide an aspect of peer-review for the presentation and exposure to oral presentation skills and formal academic discussion afterwards. INNOVATION Pediatric pulmonology is a relatively new, and thus small, subspecialty. The residents and fellows in each training program do not have exposure to a large variety of subspecialty providers; thus, limiting their exposure to different teaching styles and experiences. There is also a geographic limitation on exposure to different patient populations. To overcome these limitations, the pediatric pulmonology community has had to expand past traditional teaching methods and expand its reach thru technology to allow their trainees to have a more exhaustive educational experience.

IMPACT AND OUTCOMES

Out of 10 participating centers, with 127 participants, 24 responded to a survey request using the Survey Monkey software. Survey participants indicated that 53% presented during their first two years of fellowship, 76% felt the conference helped improve their presentation skills, 76% indicated the conference helped them connect with others in their subspecialty, 89% felt the question/answer portion of the cases helped further their understanding of the topics presented, and 100% recommended this form of experience for other individuals. Of the 24 cases presented by the respondents, only 18% were presented at other regional/national meetings and none were published as case reports. The MRVPC helps create a collaborative learning experience where trainees polish their presentation skills needed to advance their careers, while allowing older participants to view interesting cases with up to date reviews of the literature. This format is particularly useful for small sub-specialties where it is harder for trainees to access a larger group of experienced peers due to distance.

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