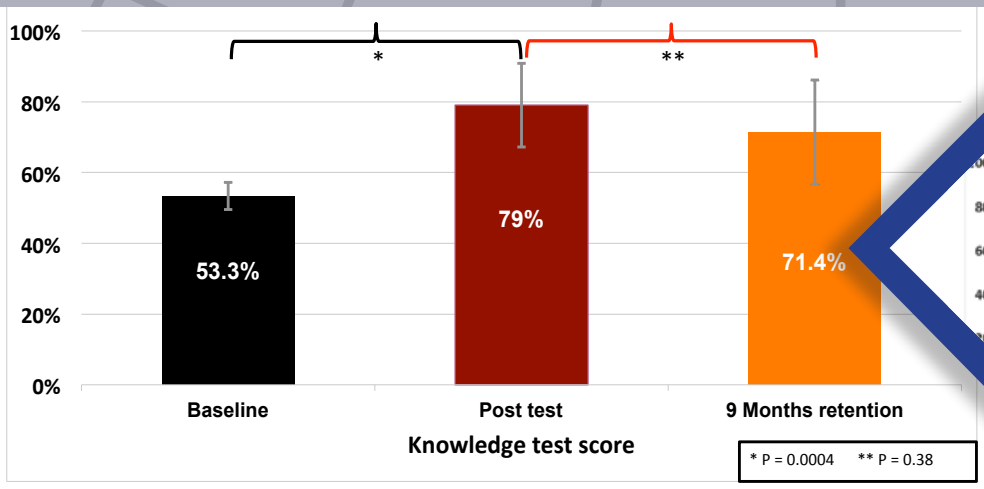
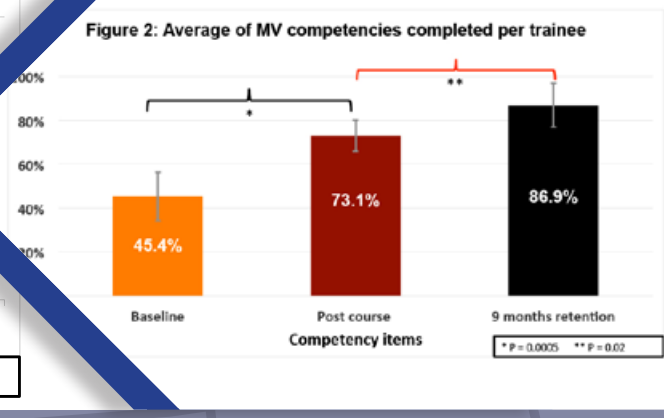
American Thoracic Society International Conference

EDUCATION





Innovations in Fellowship Education

2018 Highlights Book

ATS 2018
Where today's science meets tomorrow's care™

May 18 - May 23
San Diego, CA
conference.thoracic.org

TABLE OF CONTENTS

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? Is this program sustainable over time?
3. Transferability: How easily might this educational program be adopted by other fellowship 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:

Wayne State University, John Dingell VA Hospital

A Novel Simulation-Based Mastery Curriculum for Mechanical Ventilation (MV) in Pulmonary & Critical Care Training Programs

UC Davis Health System

A Fellow Initiative to Integrate Leadership Development with Learning Advanced Airway Management: Using the Crew Resource Management Model and High-Fidelity Simulation

University of Washington

corECMO: e-Learning within a Multimodality ECMO Curriculum for Critical Care Fellows

TOP INNOVATION ABSTRACT OF 2018!

Wayne State University, John Dingell VA Hospital

Detroit, MI

A Novel Simulation-Based Mastery Curriculum for Mechanical Ventilation (MV) in Pulmonary & Critical Care Training Programs

Program Director: Abdulghani Sankari, MD, PhD
Program Type: Pulmonary/Critical Care
Abstract Authors: Abdulrazak Alchakaki, MD(1)(2), Shahram Maroof, MD(2), Norman Theaker, Th.D., RRT, CVT(2), Connie Inman, PA-C, MPAS (2), Maryjean Schenk, MD, MPH, MS(1), Abdulghani Sankari, MD, PhD(1)(2).
(1) Wayne State University, John Dingell VA hospital, Detroit, MI. (2) Wayne State University, Detroit Medical Center, Detroit, MI

BACKGROUND

Competency in proficient and safe mechanical ventilation (MV) is very important in pulmonary and critical care medicine training. Most academic medical centers utilize a didactic based method for MV teaching[1, 2]. However, there is a clear gap in proficiency between MV didactics and applying the knowledge in real-life clinical applications with critically ill individuals with changing lung mechanics. This gap may affect clinical outcomes including mortality and morbidity. To improve MV education in our program, we created a mastery curriculum for learning MV that aims to improve knowledge and acquire essential competencies for safe and evidence-based clinical practice.

METHODS

This course curriculum blends didactics, high fidelity simulation (Sim Man 3G) with bedside MV rounds to optimize MV competency and retention. The training team is comprised of the program director, medical education fellow, and respiratory therapist (RT)/simulation coordinator. We used test lung to simulate waveforms throughout different scenarios. Each trainee underwent the following chronological steps: 1) A baseline knowledge test. 2) A sixty-minute didactic lecture. 3) A baseline one-on-one session using a high fidelity simulation manikin and standardized clinical scenarios that test different MV competencies using a standardized checklist (Table 1) over a 40 minute period followed by structured debriefing for 10 minutes. 4) A follow-up session with RT to learn knobs, waves, and scalars over approximately 60 minutes. 5) Two sub-groups joined the education fellow and RT for bedside MV rounds in MICU for 60 minutes. 6) A second one-on-one simulation session with debriefing performed approximately 2 weeks later, and 7) completed a post-course knowledge test. Each trainee completed a post-course survey using Likert scale (1-5) to evaluate learners' satisfaction with different domains of the course. Nine months later, all trainees underwent a retention assessment comprised of high fidelity simulation session followed by knowledge test. A fifteen questions test was used to assess knowledge, and a 34 items-checklist was used for the mastery simulation sessions in order to assess various MV competencies including indication for ventilation, initiation, troubleshooting, and liberation of MV.

RESULTS

Seven PGY4 trainees have completed this course as part of the orientation boot camp. Each trainee spent less than 5 hours to complete all 7 steps. All of them demonstrated significant improvement in the knowledge test with mean score (53.3% and 79.0%, $p<0.005$) at baseline and post-course tests, respectively. No significant changes noted in knowledge test mean score when compared end of course test with 9 months retention test (79% and 71.4%, $p=0.34$)(Figure 1). The average of completed MV competency items during simulation has increased from 15.4 /34 items (45.4%) at baseline to 24.9/34 (73.1%) on the second session ($p<0.005$). At nine months retention assessment, the average of completed items significantly increased to 29.6/34 (86.9%)($p=0.02$) (Figure 2). The course was highly rated by trainees with mean score (4.5 /5 on the Likert scale) and perceived as an effective interactive education for new MV learners.

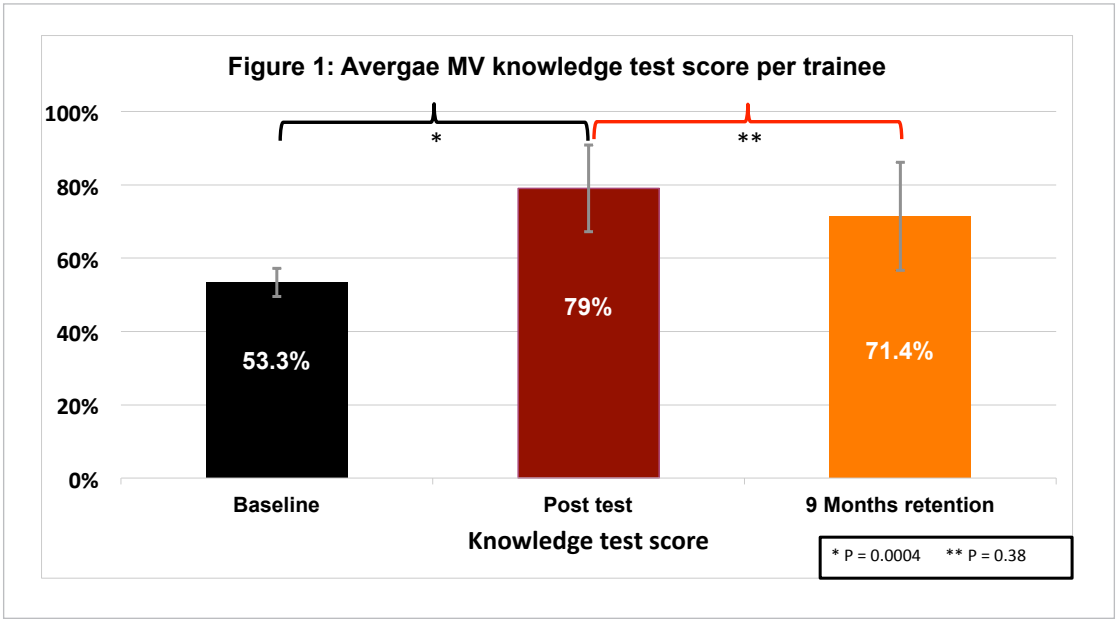
DISCUSSION

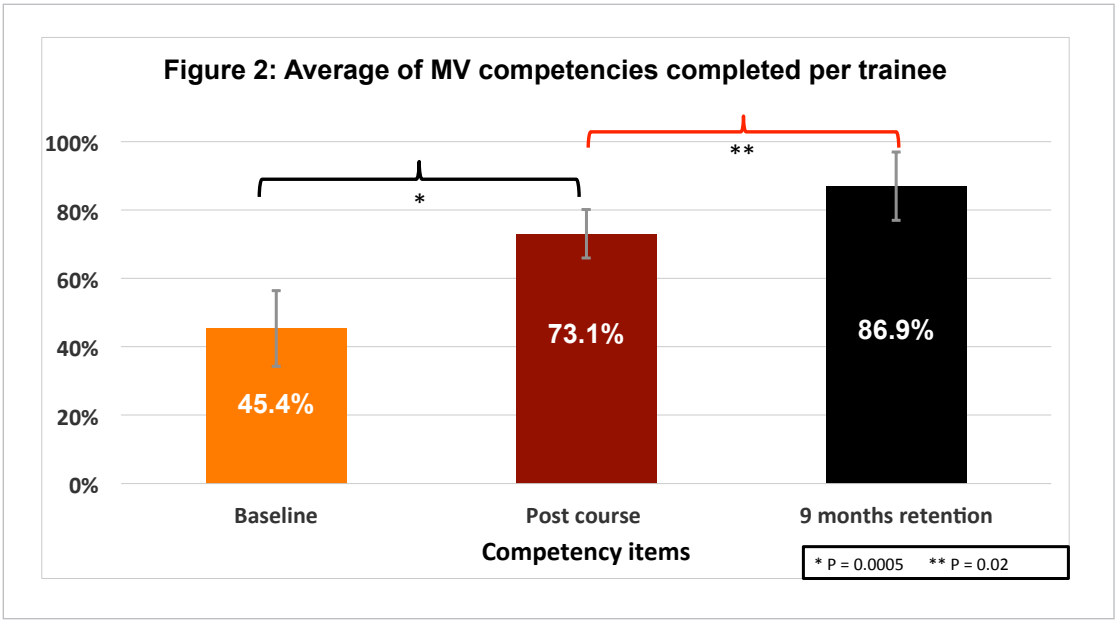
This novel simulation-based mastery curriculum was an effective method to teach new learners and improve basic competencies in MV. All trainees demonstrated higher level of competency in MV at the nine months assessment supporting adequate long-term retention. This novel curriculum supplements didactics with interactive hands-on MV sessions. In addition, it allows direct observation/ assessment of trainees' in a controlled environment. Improving MV training using simulation and structured mastery learning techniques may affect clinical outcomes; however, future studies are needed to assess its impact.

REFERENCES

1. Ramar, K., et al., *Effectiveness of hands-on tutoring and guided self-directed learning versus self-directed learning alone to educate critical care fellows on mechanical ventilation - a pilot project.* Med Educ Online, 2016. **21**(1): p. 32727.

2. Spadaro, S., et al., *Simulation Training for Residents Focused on Mechanical Ventilation: A Randomized Trial Using Mannequin-Based Versus Computer-Based Simulation.* Simul Healthc, 2017.





UC Davis Health System

Sacramento, CA

A Fellow Initiative to Integrate Leadership Development with Learning Advanced Airway Management: Using the Crew Resource Management Model and High-Fidelity Simulation

Program Director: Brian Morrissey, MD
Program Associate Director: Nicholas Stollenwerk, MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Bradley Tokeshi, MD Eduardo Solbes, MD Nicholas Stollenwerk, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

We are an accredited program in Pulmonary and Critical Care medicine in Sacramento.

RATIONALE

The ICU is a high-intensity and oftentimes chaotic setting where time critical decision-making, clear interpersonal communication, and leadership are crucial attributes that should be deliberately forged during a critical care fellowship. While some trainees have had lectures on leadership in residency or medical school, more often then not we have been forced to haphazardly emulate leadership qualities in our most respected attending physicians in lieu of a formal training program. The use of Crew Resource Management (CRM) has been described in the critical care literature and was initially developed in the 1970's by the aviation industry in order to decrease human error by facilitating team-work and leadership. Our goal was to develop first year PCCM fellow leadership skills using the CRM model and advanced airway management as a critical care scenario.

METHODS

In this ongoing study we plan on a two phase approach. During our first phase, a CRM training program was introduced to all of our first year pulmonary critical care fellows during their orientation month July 2017. While teaching basic airway management we also emphasized the following: situational awareness, effective use of our airway checklist, verbally stating an airway plan out loud to the team, rapidly adapting to a developing situation, identification of team roles, and promotion of effective closed-loop communication. Following a formal lecture period, trainees were then introduced to a high-fidelity simulation session in order to reinforce technical and team management skills. We administered a pre and post-test survey to assess the fellows' comfort level in airway team management. After an intensive 16 week clinical rotation, it is expected that our first year fellows have gained some real-world experience and facility with the technical aspects of intubation and basic airway management. Our second session, which is scheduled for November 2017, will demonstrate advanced airway techniques and reinforce CRM techniques. The second course will combine instruction in advanced airway management techniques with a graded assessment of the fellows' ability to function as an airway manager utilizing a leadership assessment tool that we developed. Grading will be performed by a volunteer critical care nurse and senior pulmonary and critical care fellow who is not involved in course design or instruction. Real-time feedback will then be given to the fellow.

RESULTS

For the first session, a pre- and post-course survey was used to assess fellows' comfort in serving as an airway manager and directing personnel during an intubation procedure on a scale of 1 to 5 (1=not comfortable, 5=very comfortable). The mean pre-course score was 2.25, standard deviation (SD) 1.50, and the mean post-course score was 3.25, SD 0.50. The difference of means was 1 [95% CI 0.93-2.93, 2-sided p=0.23]. The results from the second session will be reported upon completion of the course.

CONCLUSION

The successful management of a patient's airway is seldom achieved by one individual. As with many high-stakes interventions, effective coordination of several simultaneous actions by a team leader in concert with team members is required to obtain the desired outcome. While airway management courses often focus on the technical aspects of securing a patient's airway, we feel that this approach, while necessary, is not sufficient. We feel a crucial aspect of fellow education in performing high-stakes critical

care procedures such as airway management is the ability to function as an effective team leader. Our study will continue to evaluate the efficacy of high-fidelity simulation combined with real-time feedback using an objective assessment tool in developing not just competent airway managers, but future team-leaders in the ICU.

University of Washington

Seattle, WA

corECMO: e-Learning within a Multimodality ECMO Curriculum for Critical Care Fellows

Program Director: Andrew Luks, MD
Program Associate Director: Nick Johnson, MD
Program Type: Critical Care
Abstract Authors: Jenelle Badulak MD, Pablo Sanchez MD PhD, Andrew Luks MD, Matthew Plourde RN, Basak Coruh MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Our critical care medicine fellowship trains internal medicine or emergency medicine trained applicants over one (internal medicine sub-speciality trained, i.e. cardiology, nephrology, etc) or two years (internal medicine or emergency medicine) to become board certified through the American Board of Internal Medicine. This fellowship is housed within the Division of Pulmonary, Critical Care and Sleep and run in conjunction with the pulmonary and critical care fellowship.

BACKGROUND

Extracorporeal membrane oxygenation (ECMO) use for cardiopulmonary failure is increasing and is an important component of critical care fellowship training. The Extracorporeal Life Support Organization (ELSO) recommends that ECMO centers provide didactic, simulation and bedside training, and proficiency testing for physicians. However, simulation poses time and logistical constraints, time for in-person didactics is limited, and few educational materials are available.

METHODS

Using Kern's model of curriculum development, an e-learning program was developed for critical care fellows. corECMO (www.corECMO.com) was developed as part of a multimodality ECMO curriculum along with high-fidelity simulation and bedside clinical training. A literature search revealed no established curricula for ECMO education. A needs assessment of senior critical care fellows was performed to determine prior ECMO experience, perceptions regarding ECMO education, and desired educational strategies. The results of the needs assessment, literature review, and consultation with expert clinicians informed selection of eight episodes and development of corresponding learning objectives and content. corECMO is composed of core content as well as simulated interactive cases (Figure 1). A pilot version with half of the planned content was released for use by critical care fellows. Prior to use of corECMO, fellows completed a survey regarding their comfort with ECMO management.

RESULTS

The needs assessment revealed that 67% of fellows had no prior ECMO experience and 95% strongly believed ECMO should be a part of critical care fellowship training. In-person simulation and online interactive cases were the preferred educational modalities. The pre-curriculum survey, completed by 22 fellows, revealed limited prior ECMO didactic education: 41% of fellows had received < 1 hour of prior training. Fellows also had low levels of confidence in twelve aspects of ECMO management (Table 1), with lowest confidence in selection of blood flow rate upon initiation of VA ECMO and troubleshooting low blood flow and hypotension in VA ECMO. The survey will be readministered to fellows after viewing corECMO.

CONCLUSIONS

corECMO is an e-learning product that facilitates interactive asynchronous education as part of a multimodality ECMO curriculum for critical care fellows. Preliminary data suggests that fellows have low confidence in their ability to manage patients on ECMO. A post-curriculum survey to evaluate perceptions of confidence, group interviews, and a knowledge assessment following use of corECMO will be used to revise and complete the pilot version. Next steps include expansion of corECMO to a broader audience and validation of an ECMO knowledge assessment tool.

Table 1. Pre-curriculum confidence levels of critical care fellows with ECMO management, 1= strongly disagree and 5= strongly agree.

Aspect of ECMO Management	Mean (SD)
I can describe where the cannulas are placed for VA ECMO.	3.1 (1.4)
I can describe where the cannulas are placed for VV ECMO.	3.7 (1.4)
I can describe the path of blood through the ECMO circuit.	3.0 (1.3)
I can describe how to choose the blood flow rate when initiating the VA ECMO circuit.	1.9 (0.8)
I can describe how to choose the blood flow rate when initiating the VV ECMO circuit.	2.1 (0.9)
I can describe how to titrate the sweep gas flow rate.	2.7 (1.3)
I can describe how to troubleshoot low VA ECMO blood flow.	1.9 (0.8)
I can describe how to troubleshoot low VV ECMO blood flow.	2.2 (1.0)
I can describe how to troubleshoot hypoxia during VA ECMO.	2.0 (1.0)
I can describe how to troubleshoot hypoxia during VV ECMO.	2.5 (1.1)
I can describe how to troubleshoot hypotension during VA ECMO.	2.0 (1.0)
I can describe the unique aspects of ventilator management during VV ECMO.	2.5 (1.2)

Cincinnati Children's Hospital Medical Center

Cincinnati, OH

Improving Pediatric Pulmonary Training Curriculum and First Time Board Examination Success

Program Director: Barbara Chini, MD
Program Associate Director: Gary McPhail, MD
Program Type: Pediatric Pulmonary
Abstract Authors: Nancy Y Lin, MD; Gregory Burg, MD; Barbara Chini, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The Pulmonary Fellowship Training Program at Cincinnati Children's offers 3 years of clinical and research training in pulmonary medicine for graduates of accredited general pediatrics residency programs. Our goal is to train and educate the next generation of pediatric pulmonologists with the skills and knowledge required to achieve excellence in clinical medicine, research and medical education.

RATIONALE

Fellowship training programs in Pediatric Pulmonology are based upon a solid foundation of clinical experience, research opportunities and educational programs that ensure fellows receive a well-rounded training experience. As one measure of competence, fellows take the American Board of Pediatrics (ABP) subspecialty certifying examination after completion of training. During training, subspecialty fellows can take the Subspecialty In-Training Examination (SITE), which is based on specific contents published by the ABP. SITE scores are used by the individual fellow and training program as a gauge of one's current knowledge. For our program, improving SITE scores and first time board examination pass rate are used as a measure of success.

METHODS

The fellowship training program at Cincinnati Children's Hospital Medical Center has made multiple changes over the past several years to improve our educational program. As previously reported in 2015, following an 8-year period with board pass rate less than 80% for first time examinees, we instituted a physiology lecture series and separated our clinical services. This was associated with an increase in board passage rates in first time examinees from 77% to 100%. More recently, we have further improved our fellowship education program by changing the structure of the call schedule and increasing protected hours during on-call to maintain a more adequate balance between service and education. The aim of this study was to assess whether these new changes to the educational program would help sustain the previous improvement in SITE and board pass rates.

RESULTS

Results from the past 2 years were reviewed, and compiled with past data to compile a larger subject group, including the year 2000 to 2017. The subjects were separated into 2 groups: before and after curriculum change, and the scores were analyzed. After reviewing SITE and board examination scores, we found that first time board passage rates have continued to remain at 100% (n=16). Before curriculum change, the average SITE score was 65.4% (n=15) with a 3.5% mean improvement during training. After curriculum change, average SITE score increased to 68.4% (n=25) with a 6.8% average increase (p=0.21). When the subject groups were separated by training year, results showed that third year fellows had average SITE scores 64.2% (n=10) prior to curriculum change, which increased to 72.6% (n=17) after intervention (p=0.06). First time board examination pass rate increased from 76.9% (n=13) to 100% (n=16). Tables 1 and 2 show further details on correlation between SITE scores and board success.

CONCLUSIONS

Overall, the changes in curriculum implemented over the past few years have improved our board success rates from 77% to 100%. SITE scores have shown a positive correlation to board exam success. We are excited that board success rates have remained at 100% since the last review. Further, we are encouraged by the results of our last Accreditation Council for Graduate Medical Education (ACGME) Resident's Survey (2016-2017), which showed overall satisfaction of the fellowship program

above the national average. It further showed that faculty and staff are engaged in the development and improvement of education program and the program's full compliance with duty hours as regulated by ACGME.

TABLE 1. BOARD EXAM DATA AND AVERAGE SITE SCORES (YEARS 2000-2017)

Result	Number of Subject (N=29)	Average SITE score	Average SITE score (Minus outliers) *
First time pass	26	69.7 %	72.0 %
First time fail	3	52.4 %	46.0 %
Eventual pass	29	67.9 %	69.9 %

* There were 4 outliers: 1 with average SITE score of 65% who failed first attempt and 3 individuals with average SITE score of 49%, 53%, 54%, respectively, who passed first attempt.

TABLE 2. SITE SCORE CORRELATION TO FIRST TIME BOARD SUCCESS (YEARS 2000-2017)

SITE Score (%)	First Time Board Success – All Subjects		First Time Board Success – Minus Outliers *	
	Number of Subjects	Percentage	Number of Subjects	Percentage
>40	26/29	89.6%	23/25	92.0%
>45	26/28	92.9%	23/24	92.0%
>50	25/26	96.1%	23/23	100.0%
>55	23/24	95.8%	23/23	100.0%
>60	23/24	95.8%	23/23	100.0%
>65	21/22	95.4%	22/22	100.0%
>70	11/11	100.0%	11/11	100.0%
>75	7/7	100.0%	7/7	100.0%

Columbia University Irving Medical Center

New York, NY

Incorporating Medical Sociologist Interviews (MSI) to Evaluate Efficacy of Wellbeing Interventions in Surgical ICU Fellow Training and to Satisfy ACGME CLER Objectives – A Pilot Study at a Tertiary Academic Center

Program Director: Vivek Moitra MD
Program Type: Anesthesiology/Critical Care
Abstract Authors: Cortessa Russell MD, Claire Barshied PhD, Victoria Danhakl MD, Vivek Moitra MD, and George Gallos MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Each year we welcome nine fellows to our ACGME-accredited program in Manhattan. Our fellows have the opportunity to train with us in a supportive environment that seeks to care, lead, educate, and discover. We know that learning preferences are changing, and in the spirit of Columbia's history of innovation, we believe our teaching should be interactive, intensive, innovative, and inspiring, our 4I principle. This has led us to reimagine our wellness curriculum.

RATIONALE

Physician burnout has received increasing recognition throughout medicine, with national surveys indicating that more than 50% of physicians exhibit symptoms of burnout[1]. To address this concerning trend, the ACGME has called upon training programs to implement new strategies aimed at mitigating stress and symptoms of burnout. While changes are now prescribed in the form of the Clinical Learning Environment Review (CLER), the exact methods by which to effect and assess these changes remain undetermined. Precipitators of burnout are diverse, and we believe interventions that address the modifiable workplace occupational and organizational factors are an important component of any comprehensive wellbeing initiative[2]. We have recently launched a voluntary, year-long Wellness Curriculum (WC) that provides a mixture of didactic stress relief lectures, interactive emotional processing groups (Balint), and social events. In addition, we incorporated assessment tools to gauge stress and burnout symptoms sequentially throughout the year. Although certain quantitative psychometric questionnaires (ex. The Maslach Burnout Inventory (MBI)) are validated for determining burnout, we have experienced challenges with low participation rates when these inventories are a voluntary component of a wellbeing initiative. In addition, MBI does not identify specific areas for quality improvement or adequately gauge trainees' subjective experience of burnout. To address these issues, we incorporated a qualitative assessment intervention, by way of medical sociologist interviews (MSI), as a novel innovation to complement our pilot wellbeing curriculum for Anesthesiology Critical Care fellow trainees. We hypothesized that implementing MSI would reveal information not captured by traditional inventories.

METHODS

The WC began in July 2016 as a voluntary initiative. In parallel with didactic lectures, social programming, and Maslach assessments, we hired a medical sociologist to interview participants in October, March, and June (7 of the 8 trainees participated in both MBI and MSI). Interviews were kept confidential from curriculum developers. At the conclusion of the academic year, an MSI report analyzing the trainees' subjective experiences and assessments of the effectiveness of the curriculum was generated. In addition, we assessed the sustainability of utilizing MSI by having fellows subjectively compare the two assessment tools (MBI vs MSI) with regard to assessment efficacy, potential burnout mitigation, and satisfaction (Table 1). Given the small sample size (n=7), ordinal values, and matched pairs of responses, we used nonparametric Wilcoxon signed-rank tests to compare the results. We also provide a comparison between the two modalities with regard to curriculum changes that were made as a direct result from each report.

RESULTS

MSI scores were significantly higher than MBI scores regarding stress assessment and satisfaction in 2 of the 4 parameters we assessed (Table 1). In addition, we observed a 100% MSI participation rate compared to only 75% for MBI. The MSI results

led to identifying 6 areas for quality improvement compared to none by MBI.

CONCLUSIONS

We report on utilizing qualitative information derived from MSI as an innovative component of a dynamic and responsive wellbeing curriculum. The MSI report revealed insights and emotions from the trainees' that were completely absent from other quantitative analyses of our curriculum. MSI revealed areas of misalignment, where interventions were negatively affecting the fellows' experience, allowing us to overhaul the curriculum to feature only the highest impact interventions. Given that burnout symptoms and well-being are experienced subjectively, measuring them using solely objective methods does not adequately capture trainee sentiments. Expanding the evaluation of a curriculum's efficacy to incorporate qualitative data illuminates program weaknesses that are unlikely to be spontaneously reported, reflects the experience of trainees more fully, and provides a novel means to adapt training curricula to best benefit the end-user.

Johns Hopkins University School of Medicine

Baltimore, MD

A Financial Literacy Course for Fellows

Program Director: Henry Fessler, MD
Program Associate Director: Mahendra Damarla, Meredith McCormack, Natalie West
Program Type: Pulmonary/Critical Care
Abstract Authors: Yuval Bar-Or PhD, Sammy Zakaria, MD, MPH, Henry Fessler, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Our program's mission is to train the next generation of leaders in academic pulmonary and critical care, who will advance our field through scholarship in patient care, research and teaching. The mission is supported by strong, personal mentorship, a rich research environment, and clinical experience that is both broad and deep. Over the past decade, 95% of graduates have become full-time academic faculty, with a record of publication, successful funding, and clinical and research expertise.

RATIONALE

Fellows bear substantial financial stress. They carry an average of nearly $200,000 of medical school debt, face impending career decisions with large financial implications, and are often starting families or purchasing their first home. However, they typically receive little instruction in personal finance through their residency or fellowship training programs, and what they receive is often delivered by financial planners who are marketing services or products. This can delay or impair important financial decisions, with long-term harm.[1]

METHODS

To meet this need, we collaborated with a faculty member in our business school with expertise in personal finance education (YB). Over four weeks, he delivered an 8-hour, in-person interactive course for fellows in PCCM, that had previously been piloted with another training program and revised with participant and the co-authors' input. To share the cost of the course, which was paid by the participating programs, Cardiovascular Disease and Infectious Disease fellows were also invited. The curriculum topics are shown in Table 1. As a needs assessment, fellows who expressed interest in attending were asked to provide their demographics, household income, assets and debt. Following the course, attendees completed course evaluations and a survey asking what financial decisions they had made based upon it.

RESULTS

The course was offered to 58 fellows in the three fellowships. Twenty-five expressed an intent to attend the course. Eighteen of those completed the pre-course survey. Two-thirds were female and two-thirds married, with a mean age of 32.7 years. All married fellows had working spouses. Eight respondents had 1-3 children. All but one owned or leased a car and half owned a home. Household debt ranged from $40,000 to >$200,000. Twelve fellows completed the post-course survey after attending an average of 70% of the sessions. All respondents strongly agreed or agreed that they learned from the course, that the material should be taught in GME programs, and that they would recommend the course to others. Eleven of the 12 respondents reported making a total of 21 concrete financial decisions as a result of the course, related to retirement planning and investment, insurance coverage, employment contracts and debt management.

CONCLUSION

Previous studies, although few, have found that medical residents have high debt/income ratios, miniscule retirement savings, and lack household budgets (1-2). However, financial literacy training during residency or fellowship is scant (3-4). When provided, it is often by advisors with products or services to sell, which may bias their presentations. Our curriculum was unique in its depth and its leadership by a business school faculty member without potential biases or conflicts of interest. Despite busy schedules, more than a third of the invited fellows attended this eight-hour class. They perceived it as valuable, and it prompted tangible financial decisions. This model may be generalizable among programs at institutions with business

schools or other local, unbiased experts. We believe that greater attention to fellows' financial literacy will contribute to a heightened sense of control over their future and greater short- and long-term well-being. As these learning needs are shared by all trainees, we are currently exploring expanding this course to all GME trainees at our institution.

REFERENCES

1. Teichman JM, Bernheim BD, et al. How do urology residents manage personal finances? Urology. 2001; 57:866–71.

2. Teichman JM, Cecconi PP, et al. How do residents manage personal finances? Am J of Surgery, 2005; 189:134-9.

3. Glaspy JN, Ma OJ, et al. Survey of emergency medicine resident debt status and financial planning preparedness. Acad Emerg Med. 2005;12:52–6.

4. Mizell JS, Berry KS, et al. Money matters: a resident curriculum for financial management. J of Surgical Research. 2014; 192: 348-55.

Table 1: Financial literacy course topics; approximately 1 hour each

1. Understanding the Time Value of Money; Interpreting Balance Sheets
2. Basics of Investing, Risk, and Return
3. Budgeting Strategies at Different Stages of Professional Development
4. Managing Debt
5. Understanding Psychological Barriers to Decision Making
6. Negotiating Employment Contracts
7. Evaluating Needs and Selecting Insurance
8. Selecting and Dealing with Financial Advisors

Mayo Clinic

Rochester, MN

An Intervention to Foster Well-Being in Fellowship with a Book Club

Program Director: Kannan Ramar, MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Nicholas Braus, MD, Diana Kelm, MD, Joseph Skalski, MD, Roberto Benzo, MD, Jeff Rabatin, MD, Kannan Ramar, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The Pulmonary and Critical Care Medicine Fellowship at Mayo Clinic's campus in Rochester, MN is an ACGME-accredited 3-year program that emphasizes clinical training and research and customizes training depending on individual career goals. Mayo Clinic's 56 staff pulmonologists and intensivists serve as teachers and mentors to 18 fellows. Fellows spend up to 23 months rotating through clinical services and at least 13 months conducting mentored research.

BACKGROUND

Physicians specializing in pulmonary and critical care medicine (PCCM) face stressors in their daily practice putting them at high risk of burnout. There is a growing interest among trainees, faculty, and professional societies in developing ways to prevent burnout and promote well-being among trainees. Reading literature has been shown to improve participants' social perception and empathy, which are crucial to emotional intelligence and wellbeing. We therefore developed and piloted a book club for PCCM fellows to cultivate well-being by encouraging self-reflection and social relatedness.

METHODS

The study team identified *When Breath Becomes Air* by Paul Kalinithi as a suitable title for the first meeting. The book—a posthumous memoir of a neurosurgery resident diagnosed with terminal lung cancer—was intended to resonate with participants' clinical experiences caring for patients with advanced lung disease, as well as their personal encounters with adversity and loss during the rigors of training. Copies of the selected title were made available to all participants at least two months before scheduled book club date. The discussion was sponsored by the fellowship program, but kept informal and held off-campus at the personal residence of a faculty host. All PCCM fellows were invited. The discussion was conducted over a family-style dinner. A shared meal was intended to better denote a departure from work, and encourage group cohesion through the familiar rituals of sharing food. One day later an electronic survey was distributed to all fellows in attendance.

RESULTS

Out of 19 fellows invited, 10 attended the book club (53%) along with three invited faculty to help moderate the discussion. Survey response rate was 100%. Overall satisfaction with the book club and the selected title were high, with median scores of 2.5 and 1, respectively (0=very satisfied, 100=very dissatisfied). All ten participants noted that "peer discussion" was one of the most beneficial aspects of the book club. Other beneficial aspects cited frequently included "meeting with colleagues after hours" (9), "self-reflection on themes relevant to personal life" (8), and "self-reflection on themes relevant to clinical practice" (8). Most participants agreed that the format of the discussion was conducive to good discussion (median score 5, IQR 0-24; 0=strongly agree, 100=strongly disagree). 60% of participants reported that participating in the book club had changed or influenced their clinical practice. Elaborating on those changes, fellows reflected that it "encouraged building true relationships with peers and patients" and highlighted "the balance of personal life, devotion to clinical practice and the necessity to have a dynamic open communication to maintain this balance."

CONCLUSION

The results of our pilot suggest that an informal, off-site, fellowship-sponsored book club is feasible, well attended, well received, and may buttress trainee wellness while enriching clinical practice. Improving and further validating this wellness intervention will require additional inquiry into the genre and title selection parameters, optimal format and frequency

for discussions, and the effects on various domains of trainee and faculty well-being.

REFERENCES

1. Moss M, Good VS, Gozal D, Kleinpell R, Sessler CN. A Critical Care Societies Collaborative Statement: Burnout Syndrome in Critical Care Health-care Professionals. A Call for Action. American Journal of Respiratory and Critical Care Medicine 2016;194(1):106–13.

2. Raj KS. Well-Being in Residency: A Systematic Review. Journal of Graduate Medical Education 2016;8(5):674–84.

3. Kidd DC, Castano E. Reading literary fiction improves theory of mind. Science 2013;342(6156):377-80.

Montefiore Medical Center

Bronx, NY

Cardiothoracic Surgical ICU Boot Camp Can Improve Cardiovascular Critical Care Knowledge Among Trainees

Program Director: Adam Keene MD
Program Type: Critical Care
Abstract Authors: Marjan Rahmanian, MD; Lewis Eisen, MD; Adam Keene, MD; Rosemarie Conigliaro, MD; Anthony Carlese, DO

DESCRIPTION OF FELLOWSHIP PROGRAM

Montefiore critical care fellowship is a multidisciplinary critical care fellowship at an academic medical center. It is 2 year program for those finish Internal medicine or Emergency residency, or one year program for those graduate form cardiology, nephrology, Infectious, or Anesthesia fellowship.

INTRODUCTION

Critical care fellows graduate with an inconsistent knowledge of cardiovascular disease and an inadequate skill set for the management of patients after cardiothoracic surgery with cardiac critical illness. Hill et al analyzed 134 surveys that were completed by United States critical care fellows. Overall respondents reported lower confidence in managing cardiovascular problems compared with non-cardiovascular disease in the ICU. To overcome this deficiency, we developed a one day cardiothoracic surgical ICU (CSICU) boot camp in 2015 and 2016 with didactic lectures and hands-on skills training.

METHOD

During the CSICU boot camp, didactic lectures were given in the morning on topics: “Intervention for Coronary Artery Syndrome, Mechanical Cardiac Support in the Acute Setting, Management in the First 24 Hours after Cardiac Surgery, Hemodynamic Waveform Interpretation, Anticoagulation Issues in the CSICU, Ventilator Management in Heart Failure, Temporary pacing in the ICU Setting, Renal Replacement Therapy in the ICU” and in the afternoon participants rotated through 7 different stations “ Intra Arterial Balloon Pump, Impella, ECMO, Centrimag, Temporary Pacemaker, Mechanical Ventilator, Pulmonary Arterial Catheter” to gain experience in handling/managing and interpreting different devices in the CSICU. We administered surveys pre and post the meeting. We used a Likert scale with ratings from 1 to 5 (1 being the least confidence and 5 the most) to evaluate participant’s improvement. 76 (81.7%) of participants completed the evaluation form. We looked at grouped scores of 4 and 5 on the Likert scale pre and post our one-day intervention.

RESULT

A total of 93 persons participated over the 2 years. The participants were critical care fellows (18) 19.35 %, physician assistants (28) 30.1%, critical care attendings(6) 6.45%, the rest (41) 44% were cardiology fellows, anesthesiology and internal medicine residents and ICU nurses. Overall competency improved from 18.4% to 50% post training, familiarity as an independent operator with IABP (Intra-arterial Balloon Pump) went from 23.7% to 50.7%, with ECMO (Extracorporeal Membrane Oxygenation) from 23.7% to 45.3%, with Impella from10.5% to 34.7%, with Centrimag from 9.2% to 34.7%, with hemodynamic wave form interpretation from 28.9% to 56%, and with pacemaker from 28.9% to 53.3%. Subsequently in 2017 we sent our survey to the same 93 participants to assess their retention of the information learned in the boot camp, and received 30 responses (32.5%). Of those who had participated in a conference like this prior, 68.42% rated this one above average. 82.76% agreed or strongly agreed that taking this course improved their overall ability to work more effectively in the cardiothoracic ICU, 82.14% agreed or strongly agreed that taking this course improved their ability to operate the devices in CSICU, 68.97% were agreed or strongly agreed that taking this course improved the leadership skills and 93.33% were agreed or strongly agreed that taking this course improved their medical knowledge.

CONCLUSIONS

Our CSICU Boot camp, which was not resource intensive, was effective and improved the confidence and perceived ability of participants to manage patients after cardiothoracic surgery.

FIGURE 1

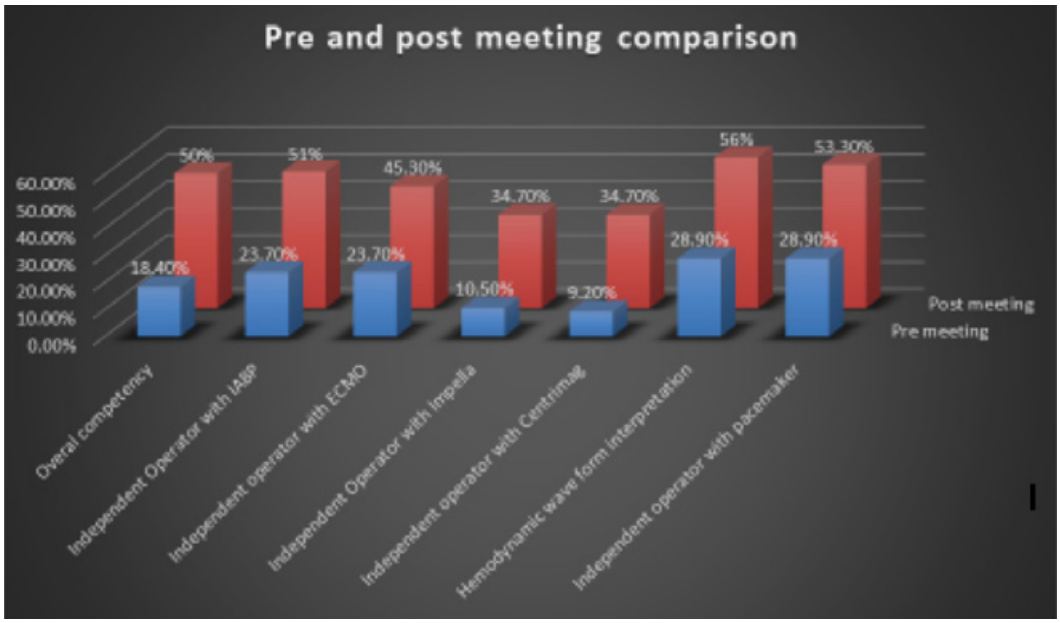
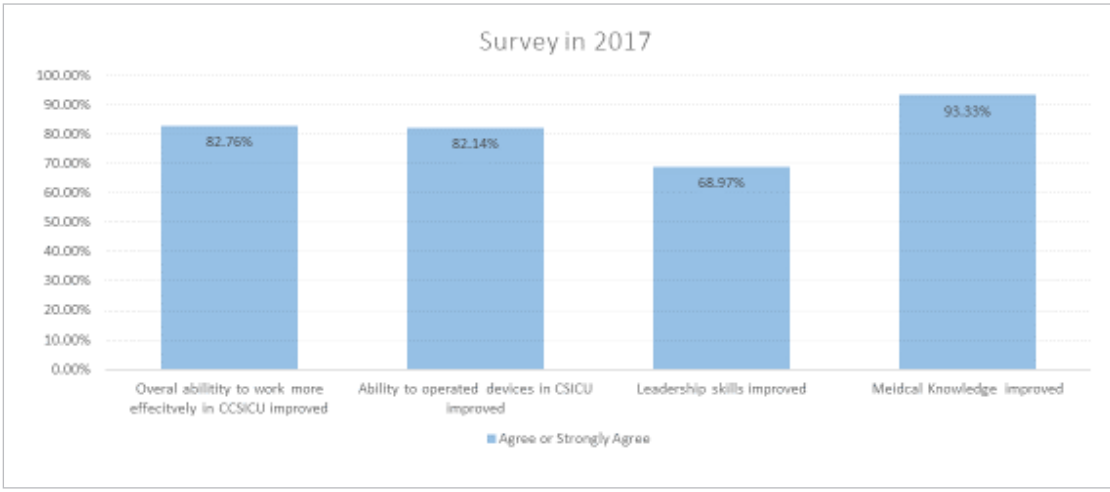


FIGURE 2



Perelman School of Medicine, University of Pennsylvania

Philadelphia, PA

Assessment of and Interventions to Reduce Burnout in Pulmonary Critical Care Medicine Fellowship Training Program

Program Director: Maryl Krieder MD
Program Associate Director: Meeta Kerlin MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Kunal P. Patel MD, Janae K. Heath MD, Meeta Kerlin MD, Oana Tomescu MD, and Maryl Kreider MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Our fellowship program is a 3.5-year training program in a large urban setting, with six fellows annually. It consists of a total of 18 months of inpatient clinical responsibilities varied between a large tertiary medical center, a community hospital, and a VA hospital. The remaining 24 months consist of ongoing continuity outpatient experiences and additional research training, in areas of clinical research, basic science research, or medical education scholarship.

RATIONALE

Burnout is an increasingly recognized problem amongst physicians. Unaddressed, burnout can lead to significant health consequences for medical providers and impact the quality of health care delivered. Causes of burnout are multifactorial (table 1) and pulmonary and critical care medicine physicians are at risk because of the intensity and stress inherent to both specialties. Identifying specific drivers of burnout during training could allow programs to innovate ways to reduce structural program components that contribute to burnout and build curriculum about emotional intelligence and resiliency. Given the diversity of programs and trainees, individualizing interventions at a programmatic level likely will be needed and requires a systemic assessment of drivers of burnout. To our knowledge, no standardized approach to address burnout in pulmonary and critical care training programs has previously been described.

METHODS

We used a mixed methods approach to assess our trainees' levels of burnout and resiliency. First, we administered validated questionnaires to measure burnout (Maslach Burnout Inventory) and resiliency (Connor Davidson Resilience Scale) to all fellows in June 2017. Second, we convened focus groups facilitated by a trained faculty member from outside of our division to obtain unbiased narratives on contributors to burnout and aspects of our training program that were supportive of wellness. Focus groups were conducted separately with first-year and senior fellows given the discordance in clinical responsibilities between those cohorts. Questionnaire results were also reported by year of training. We then engaged fellows to develop interventions that targeted the structural drivers of burnout that were identified in the program-wide assessment. Additionally, lectures focused on wellness and burnout were given to both division faculty and trainees to improve collective knowledge base.

RESULTS

All nineteen fellows in our program completed questionnaires. Four of six first-year fellows (66%) had high levels of clinical emotional exhaustion and depersonalization, which are markers of burnout. In contrast, only two of thirteen senior fellows (15%) had high levels of emotional exhaustion and three of thirteen (23%) had high levels of depersonalization. All senior fellows participate in independent research projects and five of seven third year fellows (72%) had a high level emotional exhaustion linked to their research suggesting a high level of a different type of burnout. Resiliency was low across all three years with 66%, 50%, and 57% of fellows scoring as low resiliency in first, second, and third years, respectively. Eleven fellows participated in focus groups (6 first years, 6 second years, 7 third years). Focus group sessions identified several specific areas for improvement (Table 2) as well as areas of strength. Interventions that have since been implemented include (1) reduction of primary

responsibility of the care of outpatients during the first year, when inpatient responsibilities are heaviest; (2) development of workshops to teach time management in the ICU, and (3) development of a program of coaching and feedback for preparing expected case presentations to reduce workload and increase educational yield. We plan to repeat assessment at regular intervals including administering the questionnaires every 6 months and focus groups every 12 months with the intention to create an iterative process to continue to assess needs and further improve.

CONCLUSION

Burnout is a significant issue that is being increasingly recognized and has significant implications for our field. A structured assessment of trainees in our program demonstrated high levels of different types of burnout and led to interventions which we think will improve burnout and build resiliency in our program. Through validated questionnaires and focus groups, we have created a structure to allow for iterative improvement and the process should be transferable to other programs although specific interventions will likely vary.

Drivers of burnout
Excessive Workload
Lack of Control
Unfairness
Disparate Values
Lack of Community
Imbalance between Effort and Reward

*modified from Jennings and Slavin, 2015

Weakness	Driver of Burnout Category	Intervention
Outpatient responsibilities during inpatient months	Excessive workload	Reducing primary responsibility of outpatients during inpatient busy times
Distracting responsibilities in MICU	Lack of Control, Excessive workload	Time Management in ICU workshops
Time spent on conferences, feedback on conferences	Imbalance between Effort and Reward	Coaching and feedback on preparing case presentations
Isolated from senior fellows	Lack of Community	Increase social events (in process)
Confusion over research funding	Lack of Control	Increase transparency about opportunities (in process)

University of California, San Francisco

San Francisco, CA

Mapping Content of a Clinical Case Conference to Published Curricular Blueprints & Milestones

Program Director: Stephen Lazarus MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Brian Block, MD Lekshmi Santhosh, MD Lorriana Leard, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The UCSF Pulmonary and Critical Care fellowship enrolls seven fellows annually. Fellows spend eighteen months on clinical rotations, and eighteen months doing focused research, with the option to extend training and apply for independent research funding. Teaching conferences include 1) division-wide clinical case conferences, 2) weekly physiology lectures for first-year fellows, 3) a weekly critical care curriculum for second-year fellows, and 4) outpatient didactics and journal club, which run throughout all three years.

RATIONALE

Pulmonary & Critical Care Medicine fellows are expected to achieve milestones and competencies enumerated by the American Board of Internal Medicine (ABIM) and Association of Pulmonary and Critical Care Medicine Program Directors (APCCMPD). Learning occurs in a variety of settings, including direct patient care, didactic sessions, case conferences, and self-directed study. We utilized curriculum mapping to evaluate how the clinical content of a teaching conference aligns with ABIM and APCCMPD priority areas.

METHODS

First-year Pulmonary and Critical Care fellows present clinical cases to the division five-times annually. Fellows select cases independently and invite a faculty member to discuss the case as an unknown. Approximately 35 cases are presented each year. As a component of a multi-pronged effort to revamp this teaching conference, we reviewed presentations from the past three academic years to evaluate how the content compared to the ABIM Blueprint for the Pulmonary In-Training Exam (ABIM blueprint) and APCCMPD Milestones. Two authors (BB and LS) independently reviewed slides from prior presentations and assigned them to both ABIM blueprint domains and APCCMPD Milestones. When slides were unavailable for review, authors asked presenting fellows for 'one-liner' descriptions of their teaching topic to make assignments. In cases of disagreement, the authors reviewed differences and arrived at consensus. Some cases addressed multiple ABIM domains (e.g. hypoxemic respiratory failure (domain "Critical Care Medicine") due to pneumocystis pneumonia (domain "Infections") in a lung transplant recipient (domain "Transplantation"). We chose to assign a single domain based on the teaching points emphasized.

RESULTS

Eighty-two cases were presented during the study period (36 each in 2015-16 and 2016-17, and 10 so far in 2017-2018). Slides were available for review and scoring for 50 of 82 talks (61%). Fellows described an additional nine talks in sufficient detail for them to be assigned domains, for a total of 59 of 82 talks scored (72%). The domains covered in the conference differed most strikingly from the ABIM blueprint for cases of vascular disease (15% of conferences versus 6% in ABIM blueprint) obstructive lung disease (10% versus 18%) and infections (19% versus 12%). The APCCMPD Milestones covered most frequently were Patient Care #8: Diffuse parenchymal lung diseases, Patient Care #6: Respiratory infections of the upper and lower airway, and Patient Care #3: Primary and metastatic malignancy of the lung and thorax.

DISCUSSION

Without guidance, fellows chose to present cases representing domains that largely approximated the priorities espoused by the ABIM blueprint. They deviated by over-representing some domains (vascular diseases, infections) at the expense of others (obstructive lung disease), and when they did present cases related to obstruction, favored unusual diagnoses (e.g. Diffuse Idiopathic Neuroendocrine Cell Hyperplasia) over common

ones. Limitations of this mapping exercise include 1) capturing only 72% of presentations, 2) scoring some presentations without reviewing the slides, and 3) the single-centered nature of this study. We also acknowledge that an alternative approach would be to score presentations as representing multiple domains.

CONCLUSIONS

The ABIM Blueprint and APCCMPD Milestones can be employed to create a curricular map of clinical content. Cases presented at our division conference emphasized rare diseases over routine entities. This begs the question of what type of teaching can best be accomplished in case conferences, and whether adjustments in case selection are needed to ensure coverage of core content. Future directions include evaluating other curricular activities to more comprehensively map our curriculum, assessing conferences at other institutions, and potentially guiding fellows to select cases that emphasize content areas that are currently underrepresented.

FIGURE 1: COMPARISON OF ABIM BLUEPRINT TO DOMAINS COVERED AT UCSF CONFERENCE

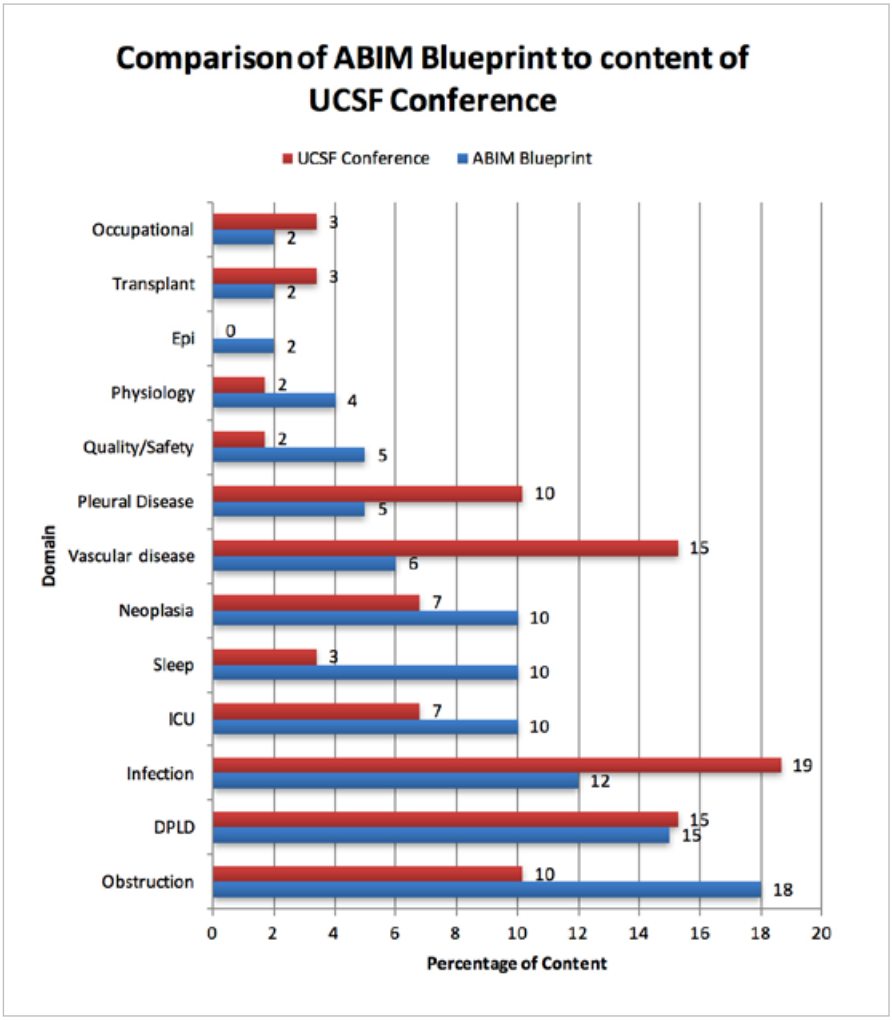


FIGURE 2: EXAMPLES OF ALIGNMENT OF ABIM BLUEPRINT WITH APCCMPD MILESTONES. NOTE THAT NOT ALL ABIM BLUEPRINT DOMAINS HAVE CORRESPONDING APCCMPD MILESTONES

ABIM Pulmonary Blueprint Domain (Subdomain)	Corresponding APCCMPD Milestone(s)
Obstructive Lung Disease (Asthma)	#Patient Care 1: Obstructive lung diseases
Obstructive Lung Disease (COPD)	#Patient Care 1: Obstructive lung diseases
Obstructive Lung Disease (Obstructive, other than asthma and COPD)	#Patient Care 1: Obstructive lung diseases
Diffuse Parenchymal Lung Disease (Interstitial lung disease associated with systemic inflammatory disease)	#Patient Care 8: Diffuse Parenchymal Lung Diseases of known etiology or idiopathic origin
Diffuse Parenchymal Lung disease (Idiopathic Interstitial Pneumonias)	#Patient Care 8: Diffuse Parenchymal Lung Diseases of known etiology or idiopathic origin
Diffuse Parenchymal Lung Disease (Granulomatous interstitial lung diseases)	#Patient Care 8: Diffuse Parenchymal Lung Diseases of known etiology or idiopathic origin
Diffuse Parenchymal Lung Disease (diffuse cystic lung diseases)	#Patient Care 8: Diffuse Parenchymal Lung Diseases of known etiology or idiopathic origin
Diffuse Parenchymal Lung Disease (Other, radiation-induced, drug-induced, alveolar proteinosis, constrictive bronchiolitis, genetic, & other rare interstitial lung diseases)	#Patient Care 8: Diffuse Parenchymal Lung Diseases of known etiology or idiopathic origin
Infections (Host defense mechanisms)	Medical Knowledge #4: Microbiology, host defenses, antimicrobial resistance
Infections (Vaccination)	Medical Knowledge #10: Disease prevention through lifestyle and environmental modifications and vaccination
Infections (Common syndromes of pulmonary infection)	Patient Care #6: Respiratory Infections of the upper and lower airway, & Patient Care #17: Acute and chronic aspiration syndromes
Infections (The Immunocompromised host)	Patient Care #6: Respiratory Infections of the upper and lower airway, & Patient Care #11: Respiratory complications in recipients of organ or bone marrow transplant
Infections (Major pathogens in pulmonary infection)	Patient Care #6: Respiratory Infections of the upper and lower airway
Infections (extrapulmonary infections in the ICU)	
Vascular Diseases (Pulmonary thromboembolic disease)	Patient Care #12: Acute and chronic venous thromboembolic disease
Vascular Diseases (pulmonary hypertension)	Patient Care #13: Pulmonary arterial hypertension due to primary and secondary causes
Vascular Diseases (pulmonary vasculitis & capillaritis)	Patient Care #15: Pulmonary hemorrhage
Vascular Diseases (pulmonary vascular malformations)	
Vascular Diseases (Sickle cell disease)	Patient Care #14: Pulmonary manifestations of hematologic diseases

University of Colorado

Aurora, CO

The Career Development and Research Retreat: Leading by Example

Program Director: Tristan Huie, MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Joshua L Denson MD, Oliver Eickelberg MD, Tristan J Huie MD

DESCRIPTION OF FELLOWSHIP PROGRAM

A pulmonary and critical care medicine fellowship program with a mission of training leaders in academic medicine.

RATIONALE

Pulmonary and critical care medicine fellows have diverse career options following fellowship. Recognized across the country are diminishing numbers of fellows who choose an academic physician-scientist career. We designed a three-day curriculum to assist first year fellows in finding a mentor, connect fellows to the faculty, and provide career development information for all fellows, particularly with a focus on mentor-mentee relationships and the life of a physician-scientist.

METHODS

In the fall of 2017, the Division of Pulmonary Sciences and Critical Care Medicine (PSCCM) at the University of Colorado School of Medicine (CU) organized an off-site, three-day fellowship retreat. All fellows were provided clinical coverage by institutional faculty to attend. All faculty were similarly invited to attend while specific local and national leaders were invited to speak. Pediatric pulmonary fellows, pediatric critical care fellows, and their faculty from CU were also invited to attend. The conference itinerary included three keynote speakers: one local senior physician-scientist, one senior physician-scientist from an out-of-state institution, and another graduate from Colorado fellowship program whose career spanned multiple domains including bio-technology. Additional 20 minute lectures were given by invited PSCCM faculty of differing race, gender, age, and background. All lecturers were instructed to be informational about their career path with attention to detail on why and how they made decisions along the way. All fellows delivered 10 minute presentations to highlight their research, career plans, and/or share advice on finding a mentor with first year fellows. Career development workshops were held for each fellow class discussing relevant topics, including how to improve the mentor-mentee relationship, negotiating for an academic job, and salary funding for physician-scientists. A fellow and faculty specific survey was sent to those in attendance following the retreat to determine how the retreat might have influenced their career aspirations and perception of life as a physician-scientist.

RESULTS

24 of 29 fellows responded to the survey. Numerous themes were identified including an appreciation for different types of academic careers, improving life as a physician-scientist, improving mentor-mentee relationships, and understanding pathways to academic careers. 100% of fellows found sessions on building an academic career helpful, while 71% felt their confidence to pursue a career as a physician-scientist was increased as a result of the retreat. Additionally, 75% of fellows felt their perception of life as a physician-scientist improved as a result of the retreat. Positive responses were gathered in response to both fellow research presentations as well as faculty speeches about individual career paths. Numerous themes emerged from this retreat as evidenced by direct feedback provided (Table 1).

CONCLUSION

The Career Development and Research Retreat is a strategy that can be used by pulmonary and critical care medicine fellowship programs to enhance understanding of the diverse career options that exists for graduating fellows and improve the perception of life as a physician-scientist. We felt that presenting the diverse array of speakers with differing race, gender, age, and background was a particular strength of this curriculum. Although some fellowship programs have scheduled retreats

in place, we believe it was important to share this valuable experience from our division with others that might be considering this initiative as a worthy venture. We hope this program will improve our success in retaining fellows in academic medicine.

TABLE 1. FELLOW PERCEPTIONS ON CAREER DEVELOPMENT RETREAT

Questions	Fellows (N=24)	Comments
Year of Fellowship?	1st: 30.4% 2nd: 39.1% 3rd: 17.4% 4th: 13.0%	
How helpful was the session "How to Build an Academic Career"?	Extremely Helpful: 62.5% Very Helpful: 20.8% Somewhat Helpful: 12.5% Not so Helpful: 0.0% Not at all Helpful: 0.0%	"There were stories to inspire us, advice on grant writing and being a good mentee/ finding a good mentor." "helpful for my career development"
How has your ***perception*** of life as a physician-scientist changed as a result of this retreat?	Significantly improved: 29.2% Slightly improved: 45.8% No change: 16.7% Slightly worsened: 8.3% Significantly worsened: 0.0%	"nice how there was life advice and research." "Enjoyed the discussion about family/work balance, especially for women."
How has your ***confidence*** in your ability to pursue a career as a physician-scientist changed as a result of this retreat?	Significantly increased: 29.2% Slightly increased: 41.7% No change: 8.3% Slightly worsened: 16.7% Significantly worsened: 4.2%	"I thought the content geared towards identifying what type of research you want to do was very helpful in clarifying what I want to do."
In your opinion, what was the most important theme from this retreat?	Diversity in types of academic careers: 20.8% Steps to improve a physician scientist career: 29.2% Discussing pathways to academic medicine: 33.3% Improving mentor-mentee relationship: 16.7% No important themes: 0.0%	"Include sessions geared directly towards each fellowship class." "Encouraging to us as fellows that the division cares about our professional development." "The most important aspect of this conference was hearing about how careers in medicine are rarely a "straight line."

Questions	Fellows (N=24)	Comments
How helpful were the faculty talks about their career paths?	Extremely helpful: 25.0% Very helpful: 41.7% Somewhat helpful: 33.3% Not so helpful: 0.0% Not at all helpful: 0.0%	"I appreciate how the faculty opened up about their personal lives and their struggles in the past. It is inspiring to see how they overcame these. It is reassuring to know that it is alright for things not to go as planned and to know that you can still make it work out in the end."
How engaging were the fellow research presentations?	Extremely engaging: 20.8% Very engaging: 45.8% Somewhat engaging: 25.0% Not so engaging: 8.3% Not at all engaging: 0.0%	"Helpful for myself to determine the type of research and type of mentor I want." "Good opportunity for fellows to practice selling their work and getting other people excited."
General Comments		I felt motivated and encouraged by the speeches focused on career paths. It was encouraging to hear so many stories where leaders in the field shared their personal or academic failures and how they responded to them ultimately reaching a satisfactory life.
How helpful were the faculty talks about their career paths?	Extremely helpful: 25.0% Very helpful: 41.7% Somewhat helpful: 33.3% Not so helpful: 0.0% Not at all helpful: 0.0%	"I appreciate how the faculty opened up about their personal lives and their struggles in the past. It is inspiring to see how they overcame these. It is reassuring to know that it is alright for things not to go as planned and to know that you can still make it work out in the end."
How engaging were the fellow research presentations?	Extremely engaging: 20.8% Very engaging: 45.8% Somewhat engaging: 25.0% Not so engaging: 8.3% Not at all engaging: 0.0%	"Helpful for myself to determine the type of research and type of mentor I want." "Good opportunity for fellows to practice selling their work and getting other people excited."
General Comments		I felt motivated and encouraged by the speeches focused on career paths. It was encouraging to hear so many stories where leaders in the field shared their personal or academic failures and how they responded to them ultimately reaching a satisfactory life.

University of Colorado

Aurora, CO

Fellowship Research Timeline for Training of Future Physician Scientists

Program Director: Ricky Mohon MD
Program Type: Pediatric Pulmonary
Abstract Authors: Emily C Mitchell, MA, Ricky T Mohon, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The University of Colorado Pediatric Pulmonology Fellowship is one of the oldest and most respected programs in the United States and was accredited the first year ACGME began accreditation for these training programs. This three-year program accepts two fellows each year, and focuses on both clinical and research experiences that generate the knowledge, skill, and technical expertise necessary to become a superb academic pediatric pulmonologist.

RATIONALE

Scholarly activity in pediatric fellowship training requires completion of a well-defined "work product" as outlined by the American Board of Pediatrics General Criteria for Subspecialty Certification. Accomplishing this minimal criterion may not adequately prepare the fellow as a future physician scientist. In addition, fellows often initiate their training program focused heavily on clinical work with little dedicated or structured time to develop the skills required for a successful career in research. Faculty research mentors may seem removed from the fellows, and perceived as too busy to begin exploring opportunities for research. Curriculum changes became necessary to correct these gaps and improve the training of our future physician scientists.

The nidus for creation of our Fellowship Research Timeline originated from compliance data obtained in the University of Colorado Pulmonary Fellowship ACGME survey for the 2016-2017 academic year, Table 1. These perceived gaps were detected in our recent Accreditation Council for Graduate Medical Education (ACGME) 2016-2017 annual program survey completed by both the fellows and faculty. The program sought to improve engagement and accountability between the fellows and the faculty. Another goal was to work with fellows and faculty on the prioritization of fellowship research experience.

METHODS

In order to obtain unbiased opinions from both fellows and faculty a third party consultant was retained to survey all fellows by their PGY level, and faculty by their academic level. Feedback were anonymously compiled and de-identified by the consultant. The feedback was distributed to department and fellowship leadership, who met to form initial recommendations based off the qualitative data. Some information was also given to a department research subcommittee, to begin drafting the Fellowship Research Timeline, Table 2.

RESULTS

Three main themes were identified from the consultant's report: 1) fellows were not being connected to available research resources 2) faculty seemed distant and uninterested in fellowship initiatives and 3) each fellow had different levels of engagement with their research mentor. To address each of these themes, four new initiatives were undertaken to improve the fellowship curriculum and education, 1) creation of a master research project database to include a detailed list all current faculty research projects that a fellow can participate 2) formation of a Fellowship Advisory Team to pair fellows with a personal and professional mentor 3) creation of a roles and responsibilities template for fellow and mentor use and 4) development of Fellowship Research Timeline for fellows to plan research goals needing to be reached every 6 months of their fellowship program. Fellows meet with senior research faculty and the fellowship Program Director to receive guidance on implementing this timeline. Fellows have communicated higher satisfaction related to their educational experience and department support being provided to them. Since we had buy in from the beginning by all stakeholders, we anticipate marked improvement in the 2017-2018 Faculty and Resident Survey Results. We feel this curriculum will be sustainable into the future as we should have

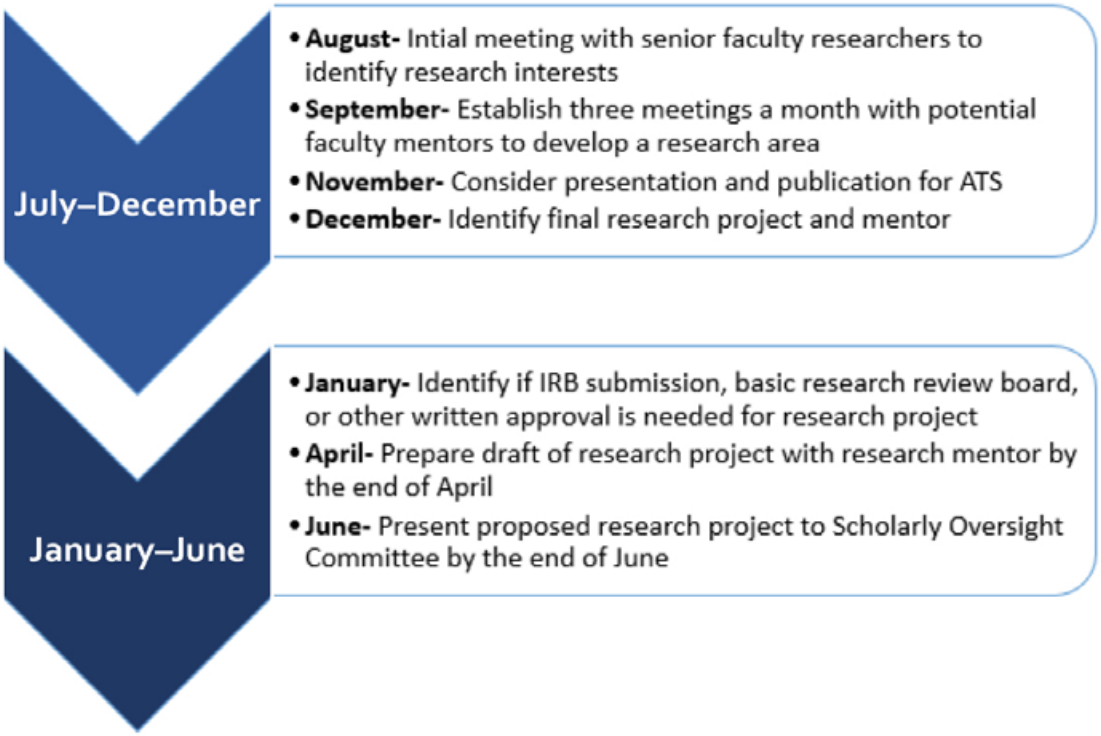
timely updates and ongoing meetings by the newly formed Fellowship Advisory Team.

CONCLUSIONS

Fellowship communication and faculty engagement will always require ongoing oversight by fellowship leadership. The specific path for each new physician scientist will vary with each trainee based on career goals, but having a Fellowship Research Timeline will help ensure that fellows will be more successful and content with their training. The formation of the Fellowship Advisory Team will proactively work to meet a fellow's specific educational needs and goals, while creating guidelines for fellow and faculty mentorship. This should ensure that faculty are engaging fellows in an appropriate and amicable manner that benefits their research development.

Table 1: University of Colorado 2016-2017 Pediatric Pulmonary ACGME Fellow Survey Results

ACGME Survey Question	% Program Compliance	% National Compliance
Faculty and staff interested in residency education	71%	85%
Faculty and staff create environment of inquiry	57%	80%
Satisfied with opportunities for scholarly activities	71%	76%



University of Colorado

Aurora, CO

How Am I Doing?: Process Changes to Facilitate More Meaningful Feedback in a Pediatric Pulmonary Fellowship Program

Program Director: Ricky Mohon, MD
Program Type: Pediatric Pulmonary
Abstract Authors: Erin Khan, MD; Ricky Mohon, MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The Pediatric Pulmonary Fellowship at the University of Colorado has a long and successful history of training pediatric pulmonologists that now practice throughout the country. Our program is committed to providing each trainee with exceptional educational experiences that will help him or her acquire the knowledge, skill and technical expertise to become a superb pediatric pulmonologist. Many have gone on to have distinguished careers as recognized, outstanding leaders in pediatric pulmonology locally, nationally, and internationally.

RATIONALE

The Next Accreditation System was brought to all ACGME-accredited programs in 2013, and prompted evaluations of learners based on six specific competencies coined Pediatric Milestones (PM). The PM are an important and comprehensive way to track a learner's progress. A sub-group developed PM for pediatric subspecialties in 2015. There are 21 subspecialty PM. Previously at our institution, each faculty member would rate a fellow in all 21 PM categories using evaluations on a Likert scale and provide additional narrative comments after any clinical contact with the fellow. This resulted in lengthy, time consuming evaluations for the faculty to frequently complete. The Clinical Competency Committee (CCC) reviews the evaluations and provides a summarized numerical score for each fellow in all PM. Faculty, fellows, and the CCC felt these evaluations lacked meaningful feedback.

METHODS

A new succinct evaluation tool, consisting of only four questions, was created and implemented in academic year (AY) 2017-2018. The shortened tool allows the faculty member to provide qualitative comments on PM categories that he or she observed while working with the fellow. The CCC will review the evaluations and assign a numerical score for each of the fellow's 21 subspecialty PM. Separate survey instruments were created to assess faculty satisfaction and time spent on both the old and new evaluation tools. To assess fellows' satisfaction with faculty feedback after assignments, we used data from AY 2016-2017 ACGME survey to compare with a similar follow-up survey. Fellows and faculty were asked for their opinion on the meaningfulness of feedback provided via the new evaluation tool compared to the old tool. Free text comments were allowed and all responses were anonymous.

RESULTS

The faculty surveys had excellent response rates with 77% (10/13) completing the survey regarding the old evaluation tool and 100% (12/12) for the new tool. Overall, faculty were not satisfied with the old tool with only 10% reporting "satisfied" and 80% reporting taking "too much time" to complete the old evaluations. Only 10% of faculty reported reading the lengthy prompts that accompanied each of the 21 Likert scale ratings for every question. In the follow up survey, 75% of faculty reported they were "satisfied" or "very satisfied" with the new evaluation tool and 83% reported taking "the right amount of time" to complete. When asked to compare meaningfulness of feedback, 59% stated they felt they were able to provide more meaningful feedback, with 33% stating the same level of meaningfulness. All of our fellows (7/7) responded to the ACGME annual survey for 2016-2017. Only 43% of those fellows reported being satisfied with feedback after assignments, compared to 72% of the national average. In the follow up survey we provided to fellows for AY 2017-2018, 100% of fellows responded (6/6). There was improved satisfaction, with 67% of our fellows reporting being

"satisfied" with the new feedback form. For those reporting "unsatisfied", comments were made regarding lack of feedback in person as well as lack of comprehensive feedback comments as sources of discontent. Of those who had experienced both evaluation tools, 75% reported more or the same level of meaningfulness in feedback via the new tool.

CONCLUSIONS

Feedback is crucial to the development of academic and clinical skills in a fellow. Meaningful feedback for learners should be direct, timely, and comprehensive. Short qualitative evaluations completed by faculty are more likely to produce meaningful feedback for fellows. Further assessment of the new evaluation tool will be performed after each semi-annual meeting of the CCC to monitor the committee's workflow changes in tracking each fellow's progress.

Faculty Survey Responses

	Regarding Old Evaluation Tool	Regarding New Evaluation Tool
	n 13 (%)	n 12 (%)
Response Rate	10 (77)	12 (100)
Satisfaction with Evaluation Tool		
Very Satisfied	0 (0)	2 (17)
Satisfied	1 (10)	7 (58)
Neutral	5 (50)	2 (17)
Unsatisfied	2 (20)	1 (8)
Very Unsatisfied	2 (20)	0 (0)
Amount of Time Spent		
Too Much	8 (80)	0 (0)
Right Amount	2 (20)	10 (83)
Not Enough	0 (0)	2 (17)
Meaningfulness Compared to Old Tool		
More	n/a	7 (59)
Same	n/a	4 (33)
Less	n/a	1 (8)

Fellow Survey Responses

	Regarding Old Evaluation Tool*	Regarding New Evaluation Tool
	n 7 (%)	n 6 (%)
Response Rate	7 (100)	6 (100)
Satisfaction with Evaluation Tool		
Satisfied	3 (43)	4 (67)
Unsatisfied	4 (57)	2 (33)
Meaningfulness Compared to Old Tool		
More	n/a	3 (50)
Same	n/a	1 (25)
Less	n/a	1 (25)

*Data per ACGME 2016-2017 Survey

University of Maryland

Baltimore, MD

Multi-disciplinary, Interprofessional Communication Simulations for Training Critical Care Fellows in Communication About Serious Illness Care Goals

Program Director: Nirav Shah, MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Shah NG MD, Marr B, Netzer G MD, Tisherman SA MD

DESCRIPTION OF FELLOWSHIP PROGRAM

The University of Maryland Pulmonary & Critical Care fellowship program provides comprehensive clinical training and a broad range of research opportunities in order to create a strong foundation for a career in Pulmonary & Critical Care Medicine. We pride ourselves on our collegiality with all of the Critical Care training programs at our institution and have worked collaboratively to create novel training tools that can benefit trainees from diverse backgrounds.

BACKGROUND

Communication is an essential skill set in critical care (cc) physicians' professional development. Patients frequently report that clinical providers frequently pay insufficient attention to effectively explaining a diagnosis and treatment plans for their illnesses. While communication is important in the daily practice of critical care physicians, little training, practice, or feedback is provided to trainees. Data have shown both that communication can be taught but that mastery requires deliberate practice and feedback.

METHODS

We developed a case-based simulation-based communications workshop for critical care fellows. In one case, the news of metastatic cancer was to be given to a patient and, in another, a family was to be informed of a loved one's brain death. An interdisciplinary team consisting of a standardized patient or family member, a critical care nurse, either a social worker or chaplain, and a member of our organ procurement organization (only in the brain death simulation) worked collaboratively in each simulation. At the conclusion of each simulation, fellows received direct feedback from the entire interdisciplinary team, including the standardized patient, followed by one-on-one feedback with the faculty facilitator. Fellows were given a pre/post survey questionnaire assessing their comfort level with various aspects of communication. All healthcare participants also evaluated the workshop as a whole.

RESULTS

To date, 10 fellows have participated in the workshop, with plans to require all critical care fellows across all 6 programs in our institution complete the workshop. Participating fellows felt more comfortable than before the workshop with various aspects of discussions with families, including breaking bad news, discussing brain death, and managing conflict. Additionally, participating chaplains and nurses felt that they gained new skills, including participating in a huddle, collaborating with other healthcare professionals, discussing brain death, and managing conflict.

CONCLUSIONS

A multi-disciplinary, interprofessional communications simulation improved critical care fellows' comfort in communication about serious illness care goals. and will be utilized to teach other trainees these essential communication skills.

Adapted from The Living Legacy Foundation of MarylandSIM02-Key Concepts: Authorization: The Huddle, Donation Conversation and DRAI

Post-Session Self-Assessment Tool for Critical Care Fellows Communication Workshop

Name: _____ Date: _____

Instructions: Please indicate your confidence level in the following areas BEFORE/AFTER participating in this session.

Self-Assessment Areas	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
☐ I feel comfortable, in general, discussing serious illness and end of life with families.					
☐ I feel confident in my communication skills and language choices in navigating diverse family meeting scenarios.					
☐ I feel comfortable leading the pre-family meeting huddle and understand how this facilitates communication.					
☐ I feel comfortable gauging a family's receptivity for new information and assessing their understanding of the clinical information I present to them during a family meeting.					
☐ I display empathy and compassion when speaking with families during end of life discussions.					
☐ I am effective in modeling a collaborative team approach during family meetings, integrating RN, Social Work, Clergy, and/or Living Legacy Foundation staff.					
☐ I can recognize situations where the family is having difficulty assimilating the information being shared and can adapt my how I communicate to meet their needs.					
☐ I feel comfortable breaking bad news and providing support to patients and their families.					
☐ I feel confident communicating to families about brain death.					
☐ I feel confident in my ability to diffuse conflict during a family meeting.					
☐ I find workshops designed to practice communication skills involving standardized patients useful in my education.					

CRITICAL CARE COMMUNICATIONS WORKSHOP EVALUATION FORM

Date: _____

Please indicate your profession/field of work:

- ☐ Critical care fellow
- ☐ Nurse
- ☐ Social worker
- ☐ Chaplain
- ☐ Other_____

1. Please rate the quality of the critical care communications training:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
This training taught me something new about communication					
I would recommend this training to other health care professionals					
The actors/patients did a good job replicating a real-life scenario I might encounter on the job					
I would participate in other communication simulations					

2. Please rate your confidence in performing the following activities after the communications training:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Participate in a huddle					
Collaborate with other healthcare professionals in discussions with families					
Have a discussion about brain death or breaking bad news					
Manage conflict with a family member					

3. Please provide any additional comments or feedback on this workshop:

University of Michigan

Ann Arbor, MI

The Forgotten Fellow: A Pilot ICU Teaching Attending Program for Fellow-Specific Critical Care Education

Program Director: Kevin Chan MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Dru D. Claar MD, Jakob I. McSparron MD, Ivan Co MD, Anthony J. Courey MD, Niket Nathani MD, Rommel Sagana MD, Kevin M. Chan MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Academic training program with both PCCM and CCM fellows.

RATIONALE

The medical ICU is a high intensity setting with diverse educational stakeholders. Attending physicians must balance teaching responsibilities for multiple learner levels with other clinical, administrative, and research obligations within and outside of the ICU. These competing responsibilities are often a barrier to delivering education specifically to fellows, who have a broad array of skill domains to master and apply in the ICU. In addition, the shift to competency-based assessment through milestones and entrustable professional activities necessitates direct observation of fellows, presenting another challenge for the busy faculty member. To address concerns about insufficient fellow-specific education in the ICU, we implemented a pilot ICU Teaching Attending (TA) program within our fellowship to improve fellow-level teaching and competency assessment practices.

METHODS

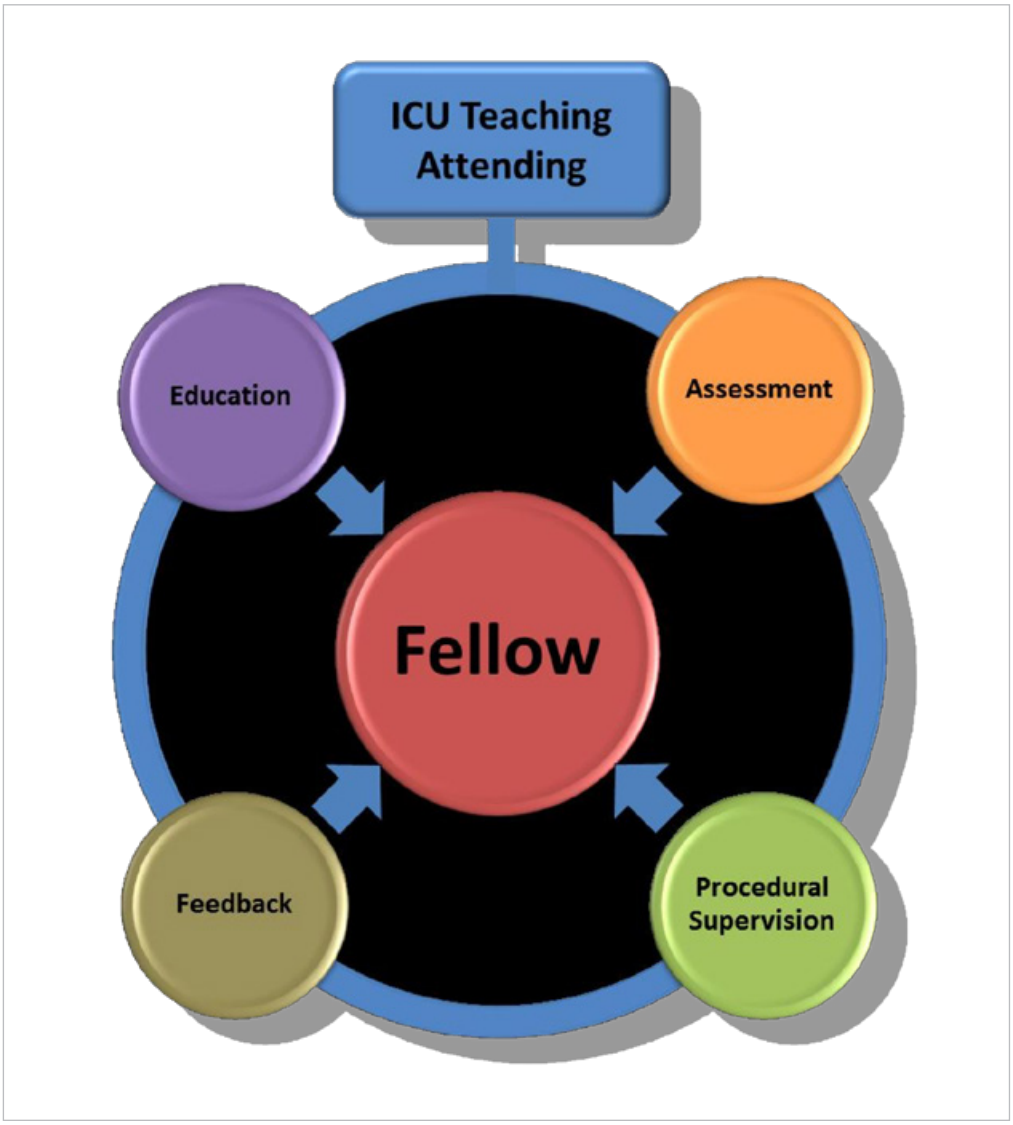
The ICU TA program was implemented for the first 3 months of the current academic year and consisted of teaching sessions conducted by a TA. Sessions were 2-3 hours and scheduled several afternoons a week. TAs were chosen from a pool of procedural and critical care skilled faculty educators. The sessions specifically targeted the non-call ICU fellow. Educational topics were chosen at the time of teaching based on fellow request, attending expertise, and clinical scenarios present in the ICU. Data was collected using a mixed-methods approach with surveys, structured interviews, and focus groups of fellows, TAs, and primary ICU attendings.

RESULTS

Five first-year fellows and two second-year fellows participated in this program. Fellows attended 17 sessions, and each fellow participated in an average of 2.4 sessions (range 1–5 sessions). Topics covered included right ventricular physiology, bedside echocardiography, thoracic ultrasound, ventilator management, tracheostomy, lung transplant, and extracorporeal membrane oxygenation. 86% of fellows rated the program as at least moderately important to their critical care education, and all fellows felt the program should be continued in the future. A majority of the primary ICU attendings did not feel that the TAs impacted their role as attending of record.

CONCLUSIONS

Full qualitative analysis is ongoing; major themes expressed by learners included appreciation of fellow-level teaching, importance of bedside teaching, skill of dedicated teaching faculty, and standardization of educational topics. Conclusions An ICU TA program is feasible and well-received in the ICU. This pilot program improved fellows' educational experience in the ICU, and may provide an important platform for competency-based assessment in the future. Full qualitative data analysis of this program is ongoing.


ICU Teaching Attending
Education
Assessment
Fellow
Feedback
Procedural Supervision

University of Virginia

Charlottesville, VA

An Innovative, Evidence-Based, Fellow-Driven Bundle to Improve Professional Satisfaction and Wellness

Program Director: Eric Davis, MD
Program Associate Director: Sarah Kilbourne, MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Sean J. Callahan MD, Kyle Enfield MS MD, Jeffrey M. Sturek MD PhD, Ryan Richard MD, Galina Lyles MD, Cheryl Etelvari BA, Sarah Kilbourne MD, Eric M. Davis MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Our pulmonary and critical care fellowship has a rich history with an overall mission of recruiting and training the future leaders in the field. Our approach is multifaceted and includes a) outstanding clinical training spanning the breadth of pulmonary and critical care, b) a mentored and structured research program and c) focused attention on the career development and wellness for our fellows.

BACKGROUND

Rates of burnout and professional dissatisfaction are high amongst physicians, affecting more than 1 in 3, with critical care physicians approaching 50%. Research indicates professional dissatisfaction and burnout negatively affect both patient care and physician personal wellness on a number of fronts, including mental health. Reasons for physician displeasure are numerous and diverse, with unique underlying causes. Based on concerning indicators of physician well-being, our program sought to implement data-proven strategies specific to our fellowship to improve the trainee experience, as described by the ACGME Common Program Requirements focus on well-being.

METHODS

We analyzed the yearly anonymous ACGME Fellow Survey results and identified areas for improvement in the domains of Duty Hours, Educational Content, Resources, and Patient Safety. Within each of these domains we identified specific opportunities for quality improvement. Using A3 methodology, we then developed an ideal state and an action plan for interventions. The fellowship program developed interventions through a PubMed query for evidence-based interventions to improve burnout and professional satisfaction, and modified interventions specifically to fit the fellowship program. In the absence of an evidence-based strategy, we implemented interventions developed by the fellows based on the target state defined in the A3. This resulted in a bundle of interventions over the subsequent six months (Figure 1). To assess the efficacy of our multi-faceted intervention, fellows completed a 15-question Likert scale survey pre- and post- (3 months) bundle implementation, with plans to repeat the survey at 6 and 12 months. Fellows also completed Epworth Sleepiness Scales (ESS) pre- and post-implementation of the bundle. The chi-square test was used to analyze categorical data for all questions.

RESULTS

All fellows completed both assessments. An improvement was observed in 13 of the 15 domains queried between pre- and post-implementation surveys, which included improvements in all domains measuring quality of life and sleep. Despite the small dataset (n=9), several domains demonstrated statistically significant improvement, including 1) satisfaction with weekend schedules ($p=0.004$), 2) increased ability to do non-clinical activities, such as research ($p=0.004$), and 3) overall quality of life ($p=0.018$) (Figure 2a). We also observed a statistically significant improvement in abnormal ESS scores ($p=0.018$), with a reduction in the mean ESS from 12 to 7 (Figure 2b).

DISCUSSION

Implementation of an innovative wellness bundle directed to improve fellow well-being was successful in improving trainee-perceived quality of life, sleep, and time afforded to do projects which complement patient care. These interventions were primarily designed by, or in conjunction with, the primary stakeholders. When applicable, we utilized proven problem-solving approaches such as lean methodology to implement changes. Consistent with the physician burnout literature, we

found organizational interventions (such as work reduction and increasing employee influence) to be markedly effective. The innovative wellness bundle implemented by our trainees has portability in the sense that other training programs can identify their areas of improvement and use similar engagement strategies and data monitoring to enact change and measure the response.

REFERENCES

1) Shanafelt TD. "Enhancing Meaning in Work. A Prescription for Preventing Physician Burnout and Promoting Patient-Centered Care." JAMA, 2009;302(12):1338-40.

2) Squeiers JJ, et al. "Physician Burnout: Are We Treating the Symptoms Instead of the Disease?" Ann Thorac Surg 2017;104:1117-22.

3) West CP, et al. "Interventions to Prevent and Reduce Physician Burnout: A Systematic Review and Meta-analysis." Lancet 2016;388(10057):2272-81.

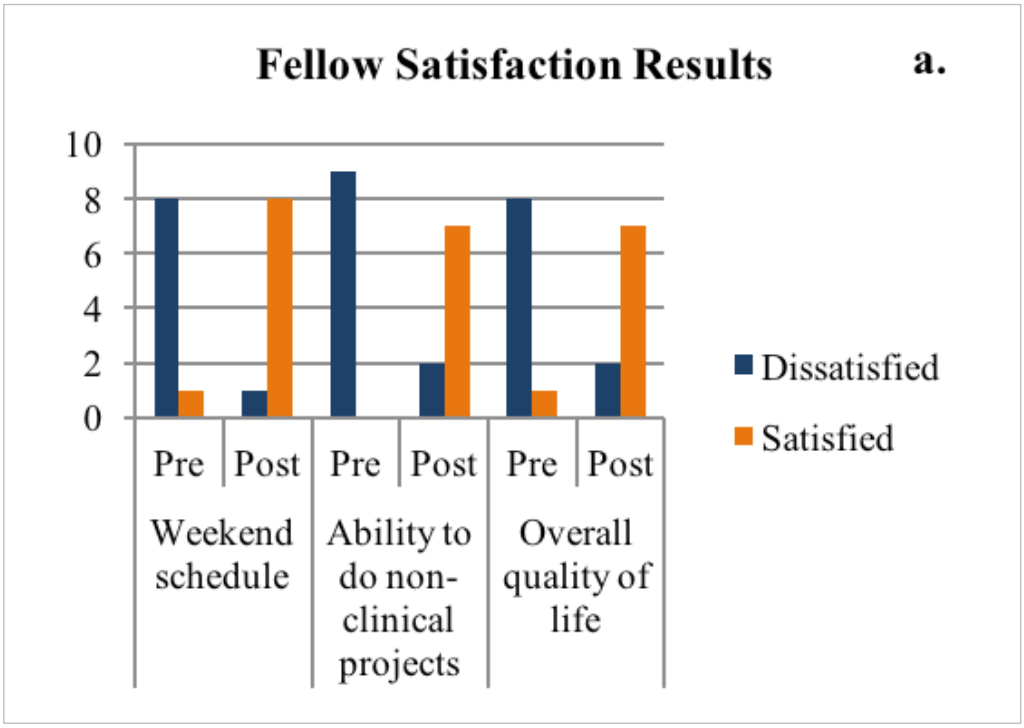
4) Panagioti M, et al. "Controlled Interventions to Reduce Burnout in Physicians. A Systematic Review and Meta-Analysis." JAMA Intern Med, 2017;177(2):195-205.

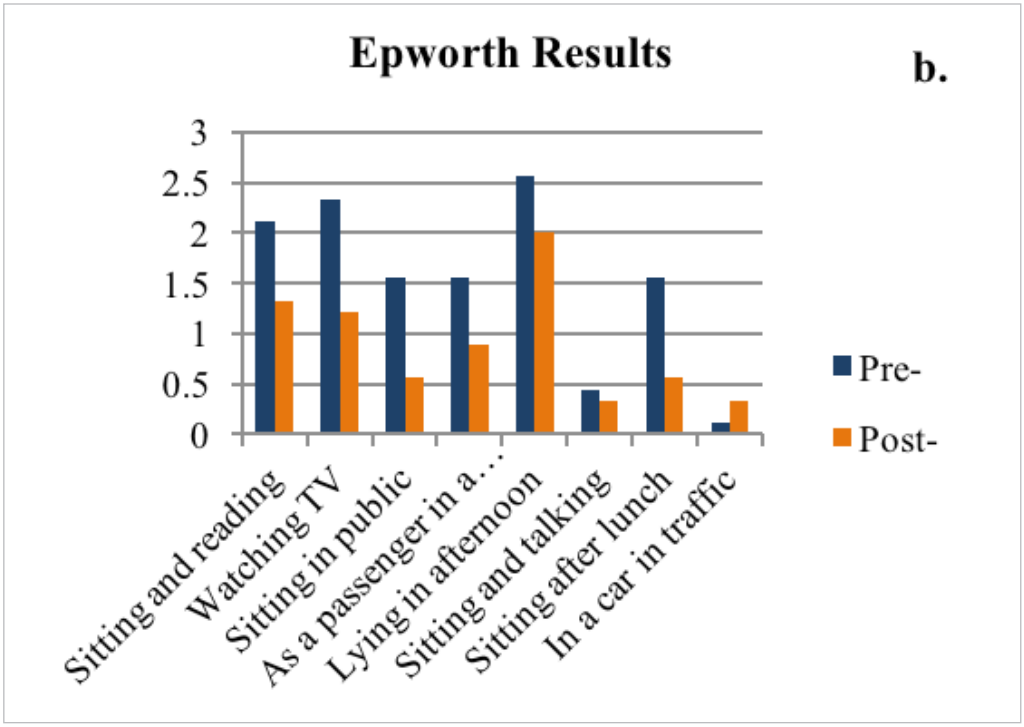
Figure 1: ACGME AREAS FOR FOCUSING ON TRAINEE WELL-BEING

ACGME Well-Being Focus	UVA Fellowship Correlate	Implementation
Enhancement of what it means to be a physician	Lack of curriculum-specific procedural time or teaching Excessive phone-time spent admitting patients to the MICU Fellows obtain scope and assemble and dissemble each bronchoscopy cart	Procedures rotation assigned to 1st year fellows and as an elective thereafter* Joint fellow/resident paging system, equating to less time spent triaging and affording more medicine resident autonomy* Shared RT/fellow system, resulting in minimal fellow processing of bronchoscopes*
Attention to scheduling and work intensity	Duty hour concerns while in the MICU	Call system re-structure, resulting in nearly 100% duty hour compliance*
Evaluating workplace safety data	Perceived lack of influence in the improvement of patient care	Institution of monthly MICU Quality Improvement conferences, led by fellows, at which interventions are designed
Policies/programs that encourage trainee well-being; attention to trainee burnout and depression	High levels of trainee burnout and dissatisfaction Lack of curriculum detailing post-fellowship opportunities and finances	Monthly wellness seminars for the pulm/CC division, inviting outside faculty and experts in the area of wellness Monthly lectures focused on career development topics, including contract negotiations, interviewing skills, and manuscript-writing tips

*Fellows designed intervention either in part or in full

Figure 2: PRE- AND POST-BUNDLE RESULTS





University of Wisconsin School of Medicine and Public Health

Madison, WI

Transitioning a Fellowship to the Digital Age: Daily Electronic Evaluations and Electronic Portfolios

Program Director: Joshua Smith MD
Program Type: Pulmonary/Critical Care
Abstract Authors: Joshua Smith MD, Jami Simpson MD, Bryna Ebben MD, Mark Regan MD

DESCRIPTION OF FELLOWSHIP PROGRAM

Our fellowship is affiliated with a quaternary referral hospital as well as a VA Hospital. We have 24 faculty members, 12 of whom practice in the ICU. Our mentorship program pairs trainees with key clinical education faculty members to provide role models who exemplify our values and offer support via regular meetings throughout training. We offer rotations in the SICU, neurosurgery, acute care surgery, and trauma.

BACKGROUND

The ACGME's Next Accreditation System requires training programs to document milestone performance at 6 month intervals during a trainee's education. Our Clinical Competency Committee (CCC) meets to discuss all trainees' performance on the milestone scale. Our program identified barriers that made the CCC meetings and milestone selection process difficult: rotational evaluations provided limited insight into a trainee's performance, mentors did not have access to trainees' data until immediately before the CCC meeting, and the trainees did not have a central repository of all their performance data. We aimed to redesign our evaluation system and create an electronic portfolio for our fellows that would be readily available and mobile for use in a variety of settings.

Our trainees rotate with numerous faculty members over the course of a month. Frequently, the end of rotation feedback included comments like "good fellow" or "should read more." In order to elicit more specific, task-directed feedback, we developed an evaluation tool that is sent to faculty on a daily basis. We modified our previous monthly evaluations and mapped them to ACGME milestones. These daily evaluations were created in Qualtrics and faculty were sent a text message every day during the work week (Monday through Friday) as a reminder to complete the evaluation.

MEHTODS

We allowed our ICU faculty to choose one topic to evaluate each day (Image 1). Our goal was to have faculty complete at least two evaluations per week recognizing clinical services and expectations of trainees could prevent opportunities to provide meaningful, specific feedback. We aimed to have eight evaluations to be completed per fellow per month, for a total of 16 evaluations per month (2 fellows rotating per month).

RESULTS

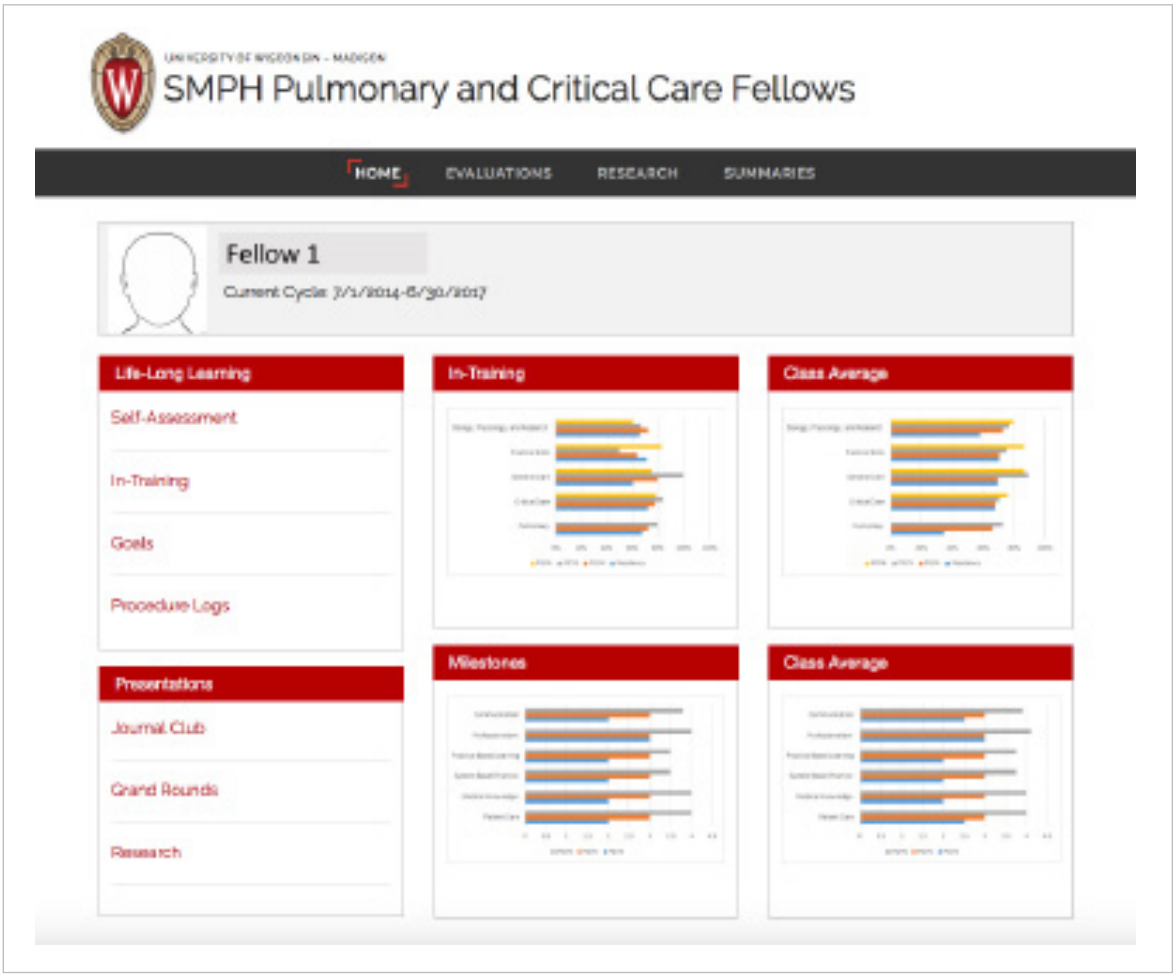
We assessed the faculty performance of these evaluations from March through October 2017, with a goal of 128 total evaluations performed. During this time, seventy six evaluations were performed on nine fellows, for a 76% completion of target number of evaluations. Fellows had a mean of 4.8 evaluations per month, with a range from 0 to 12. For fellows with low numbers of daily evaluations, we elicited additional feedback from faculty. Among the evaluations completed, we identified 34 comments with meaningful specific feedback directed at individual tasks (40.7% of evaluations).

To combat the latter issues, our fellowship coordinator created individualized electronic portfolios in an intranet website called MyPort. MyPort is password protected to allow access to the mentor, trainee, and program directors. The portfolio is organized to provide an at-a-glance view of a trainee's competency throughout training. We do this by offering graphic representation for peer-peer comparison data such as in-training exams, procedure log completion, and milestone placements (Image 2). The trainee is able to view their personal scores relative to the class average. Since MyPort is mobile friendly, it can be viewed on the go for instant review of valuable feedback. All daily evaluations are made available on MyPort at the completion of a rotation for fellows to view. This tool has allowed for more effective mentor-mentee

relationships since both parties have access to up-to-date information and can formulize action plans in a partnership.

CONCLUSIONS

With these innovations, we believe we are transitioning our fellowship from the paper age to the digital age. In the process, we are providing our fellows with meaningful feedback and a user friendly system to review their performance over time. We recognize we still have areas of improvement as we have not achieved our target goal of evaluations completed each month. We aim to use the data collected to provide further feedback to our faculty to improve evaluation completion with inclusion of meaningful feedback.



Innovations in Fellowship Education

2018 Highlights Book

THE ATS CONGRATULATES THE FOLLOWING THREE OUTSTANDING FELLOWSHIP PROGRAMS

WAYNE STATE UNIVERSITY	UNIVERSITY OF WASHINGTON	UNIVERSITY OF CALIFORNIA DAVIS

ATS 2018
Where today's science meets tomorrow's care™

May 18 - May 23
San Diego, CA
conference.thoracic.org