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Supplement to

Western Journal of Emergency Medicine:

Integrating Emergency Care with Population Health

CORD *Abstracts Special Issue*

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Council of Emergency Medicine Residency Directors

Advances in Education Research and Innovations

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Important Dates to Remember...

Date	Activity
August 1, 2016	CORD Awards Nominations Begin
September 1, 2016	CORD Resident Applications to Committees Fall Submissions Begin
September 23, 2016	2017 CPC Semi-Final Initial Case Submissions Begin
October 3, 2016	CORD Faculty, Resident & Program Coordinator Awards Nominations Deadline
October 7, 2016	CORD Abstract Submissions Begin
October 17, 2016	CORD Business Meeting (Membership Meeting)
October 21, 2016	CORD Resident Applications to Committees Fall Submissions Deadline
November 7, 2016	CORD Academic Assembly Registration & Housing Reservations Begin
November 15, 2016	CORD Board of Directors Nominations Begin
November 18, 2016	2017 CPC Semi-Final Initial Case Submissions Deadline
December 1, 2016	CORD Abstract Submissions Deadline
December 31, 2016	CORD Board of Directors Nominations Deadline
January 3, 2016	CORD Academy for Scholarship & Longevity Awards Nominations Deadline
January 13, 2017	CORD Academic Assembly Early Bird Registration Ends
April 14, 2017	CORD Academic Assembly Pre Registration Ends
April 27-30, 2017	CORD Academic Assembly —Fort Lauderdale, Florida

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Council of Emergency Medicine Residency Directors Advances in Education Research and Innovations

The Council of Emergency Medicine Residency Directors Advances in Education Research and Innovations Forum presented a peer-reviewed selection of emergency medicine graduate and undergraduate educational research and innovations in both oral and poster formats at CORD Academic Assembly 2016. Emphasis was placed on novel research questions and designs. Innovation submissions included curricular designs, computer applications, faculty development, recruitment processes or similar topics.

The *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health* would like to thank the Council for Emergency Medicine Residency Board of Directors for helping to make this collaborative special issue possible.

Research Abstracts

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Holly Caretta-Weyer, MD, Morgan Wilbanks, MD, Bryce Snow, MD, Aaron Kraut, MD, Ciara Barclay-Buchanan, MD, Mary Westergaard, MD

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Walt Lubbers, MD, Brian Adkins, MD

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Andrew King, MD, FACEP, Jillian McGrath, MD, Sarah Greenberger, MD, Ashish Panchal, MD, RDMS, Laura Thompson, MD, Sorabh Khandelwal, MD

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Jay Khadpe, MD, Mark Silverberg, MD

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Andrew King, MD, FACEP, David Calcara, MD, Jessica Liddil, MS, RRT, RCP, Sarah Greenberger, MD, Ashish Panchal, MD, RDMS, Jillian McGrath, MD, Brad Green, MD, Sorabh Khandelwal, MD

58. **Simulation and Standardized Patient Encounters as a Method to Assess Residents in Patient Centered Communication (ICS1) Milestones Routinely Identified as Difficult to Evaluate in the Clinical Setting**
Andrew King, MD, FACEP, David Calcara, MD, Jessica Liddil, MS, RRT, RCP, Sarah Greenberger, MD, Ashish Panchal, MD, RDMS, Jillian McGrath, MD, Brad Green, MD, Sorabh Khandelwal, MD

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Andrew King, MD, FACEP, David Calcara, MD, Jessica Liddil, MS, RRT, RCP, Sarah Greenberger, MD, Ashish Panchal, MD, RDMS, Jillian McGrath, MD, Brad Green, MD, Sorabh Khandelwal, MD

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Andrew King, MD, FACEP, David Calcara, MD, Jessica Liddil, MS, RRT, RCP, Sarah Greenberger, MD, Ashish Panchal, MD, RDMS, Jillian McGrath, MD, Brad Green, MD, Sorabh Khandelwal, MD

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Jessica Mason, MD, Sandra Najarian, MD

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Michelle Lall, MD, MHS, Melissa White, MD, MPH, Edward Stettner, MD, Jeffrey Siegelman, MD

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Linda Spillane, MD, Flavia Nobay, MD, Lee Marks, MD, Nicole Acquisto, Pharm D.

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Christopher Calandrella, DO, Mathew Nelson, DO, Michael Cassara, DO

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David Marcus, MD, Mityanand Ramnarine, MD, Pinaki Mukherji, MD, Teresa Amato, MD, Nancy Kwon, MD, Gino Farina, MD

70. **The Use of OSCE to assess Patient Care, Professionalism and Interpersonal Communication Milestones in EM residents.**
Miriam Kulkarni, MD, Harsh Sule, MD, Jill Ripper, MD, Tiffany Murano, MD

71. **Use of a CPC to Demonstrate Resident Completion of Multiple ACGME EM Milestones**
Kathleen Kane, MD, Kevin Weaver, DO, Gavin Barr, MD, Shawn Quinn, DO, Terrence Goyke, DO, Amy Smith, PhD, Dawn Yenser, C-TAGME, Bryan Kane, MD

72. **Use of Online Marketing Technology To Track Resident Engagement In A FOAM-Supplemented Curriculum**
Ian Justl Ellis, MD, Daniel Egan, MD

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Andrew King, MD, FACEP, Daniel Adams, MD, Michael Barrie, MD

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Andrew King, MD, FACEP, Emily Gibbons, Lori Miller, Ellen Harr-Weatherby

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Admissions
Herbert Hern, MD, MS, Harrison Alter, MD, MS, David Duong, MD, MS, Michael Gisondi, MD, Colleen Roche, MD, Tarak Trivedi, MD, Melissa White, MD, Charlotte Wills, MD

2. **Impact of Doximity Residency Rankings on Emergency Medicine Applicant Rank Lists**
William Peterson, MD, Laura Hopson, MD, Sorabh Khandelwal, MD, Fiona Gallahue, MD, Melissa White, MD, John Burkhardt, MD, PhD, Aimee Rolston, MD, Sally Santen, MD, PhD

3. **Upstream from the Emergency Department: An Integrative Case for First-Year Medical Students**
Holly Caretta-Weyer, MD, Stephen Bagwell, MA, Mary Westergaard, MD, Jamie Hess, MD, Christine Seibert, MD

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Maia Dorsett, MD, PhD, Alicia Oberle, MD

Curricular Innovations Oral Presentations

1. **A Checklist for Assessment of Entrustment for EPA-10**
Laura Thompson, MD, Jonathan Lipps, MD, Cynthia Leung, MD, PhD, Brad Green, MD, Troy Schaffernocker, MD, Cynthia Ledford, MD, John Davis, MD, PhD, Nicholas Kman, MD

2. **EMRA Match v4.0: An Alternative to Doximity's Residency Navigator**
Zachary Jarou, MD, Sean Ochsenbein, Doug Franzen, MD, Med, Hilary Fairbrother, MD, Adam Kellogg, MD

3. **Teaching Handovers to Medical Students in the ED: Addressing Entrustable Professional Activity (EPA) #8.**
Matthew Sarsfield, MD, Keith Schenker, MD, Kara Welch, BA, Paul Ko, MD

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Shannon Toohey, MD, Warren Wiechmann, MD, Julie Youm, PhD

2. **Innovative Curriculum for Media Interactions**
Marquita Hicks, MD, Gur Aurora, MPH, Cedric Hicks, MLIS, Ed.D, Derek Robinett, MD

3. **Mass Casualty Simulation for EM Residents**
Chelsea Belden, MD, Chinmay Patel, DO, Rebecka Lopez, MD

4. **Skill Retention After Completion of a Proficiency-Based Curriculum to Teach Cricothyroidotomy**
Laura Grangeia, MD, Heather Streich, MD, Justin Stone, MD, Erin Talman, MD, Amita Sudhir, MD

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1. **Do Emergency Medicine Residency Graduates Feel Prepared To Manage Closed Fractures After Training?**
Mark Pittman, MD, Michelle Lall, MD, Charlotte Wills, MD, Lalena Yarris, MD, Jacob Ufberg, MD, Cullen Hegarty, MD, Jessica Smith, MD, Jeffrey Love, MD

2. **Competitiveness of Emergency Medicine as a Specialty**
Michael Pasirstein, MD, MPH, Diane Rimple, MD, Alexis Pelletier-Bui, MD, Michael Van Meter, MD, MPH

3. **Residency Applicants Prefer an Online System For Scheduling Interviews**
Herbert Hern, MD, Charlotte Wills, MD, Harrison Alter, MD, Steven Bowman, MD, Boyd Burns, DO, Timothy Evans, MD, Jeffrey Schnieder, MD, Lalena Yarris, MD

4. **Does Mastery of Cardiac Arrest Management Skills Transfer From A Task Training Environment To A Dynamic High Fidelity Simulated Environment?**
Trent Reed, DO, Mary McHugh, MD, Amy Hoyt, MEd, Donna Quinones,, William Adams, MA

5. **Predicting Initial ABEM Board Passage Rates Using USMLE Scores**
Terrell Caffery, MD, Glenn Jones, PhD, Mandi Musso, PhD

Research Abstracts

1 A Multi-Disciplinary, Hands-On Workshop on Facial Wound Repair Improves Knowledge and Confidence Among EM Learners

Batista A, Satteson E, Hartman N / Wake Forest Baptist Medical Center, Winston Salem, NC

Background: Emergency physicians frequently repair facial wounds. While most of these are routine, a few types, including ear, lip and through-and-through cheek lacerations require special techniques for closure. To our knowledge there are no reported, interdisciplinary educational modules instructing emergency medicine residents about facial wound repairs.

Objectives: To assess effectiveness of an interdisciplinary, experiential module designed to improve EM resident knowledge and comfort with facial wound repairs. We hypothesize that learners will feel more comfortable with these repairs and will demonstrate increased knowledge about the topic.

Methods: A brief needs assessment was conducted by polling residents in our PGY 1-3 residency as to which repairs caused the most discomfort. A group of 31 participants, including 2 fourth-year medical students, 26 EM residents (PGY1-3) and 3 pediatric EM fellows participated in this educational module. Participants were given a 5 question pre-test prior to a didactic session about facial wounds taught by a plastic surgeon in an interactive fashion. After the didactic they had hands-on learning and practice on cadavers, under the guidance of plastic surgery residents and EM faculty. Participants then took a 5 question post-test, followed by a 4 question survey assessing comfort with each repair utilizing a 5 point Likert scale. The pre- and post-test scores for each participant were compared and a delta was calculated for each participant. Descriptive statistics, including 95% confidence intervals, were reported.

Results: Participants improved their individual score from the pre-test to the post-test by an average of 1.52 points (95% CI [1.04-2.00]), with overall pre-test mean of 3.06 (95% CI [2.71-3.41]) and post-test mean of 4.17 (95% CI [3.92-4.43]). Average reported comfort level for each technique was as follows: lip repair 4.39 (95% CI [4.21-4.57]), ear repair 4.36 (95% CI [4.18-4.53]), cheek repair 4.29 (95% CI [4.10-4.48]), suture choice 4.23 (95% CI [4.00-4.49]).

Conclusion: Participants increased their knowledge and reported being more comfortable with the various facial wounds repairs and suture choice. An interdisciplinary and hands-on approach proved successful in teaching these techniques.

2 A Novel Approach to Documentation: Telescribes

Worthing J, Gulati R, Habboushe J, Femia R, Wu T / New York University School of Medicine, New York, NY

Background: The work of ED physicians is complex, with increasing patient volumes, rapidly changing EHRs, and growing documentation regulations. Medical scribes aim to address these problems, workflow efficiency, job satisfaction, and increase reimbursements. Despite the advantages, facilities remain resistant to adopting a scribe program for several reasons, including cost, addition of ED personnel, and incorporation new roles within an established workflow. Looking to minimize challenges, we propose modified telescribes utilizing a pre-established, qualified volunteer program. Workflow consists of providers connecting to telescribes via audio/video from secure mobile devices. Proper consent is obtained and telescribes document patient interactions in real time. Providers reap benefits of note drafting and volunteers gain valuable education only obtainable through collaboration with ED providers.

Objectives: Assess physician, hospital volunteer, and patient receptiveness to scribes and telescribes.

Methods: A survey was sent to 88 attendings (RR=29%) and 59 residents (RR=39%) employing yes/no, multiple choice, and Likert scale questions to assess receptivity to scribes and telescribes; no supplemental information. A second survey evaluated hospital volunteers' desire to participate (n=50; RR=44%). A third survey (n=12) gauged patient responses to both scribes and telescribes services using a likert scale after a brief explanation of the services.

Results: Of providers surveyed, 84% never used a traditional scribe or telescribe, while 85% indicated a desire to work with them. Furthermore, 95% agreed that learning to use a scribe would benefit them in the future and 75% agreed to adjust workflow to accommodate a scribe. Despite willingness to use a traditional scribe, 45% indicated they would not use the telescribe service (free-text rationales related to inconvenience). Secondly, 95% hospital volunteer respondents were interested in the scribe position. Finally, a patient survey showed zero were uncomfortable with presence of a scribe and 16% and 25% were uncomfortable with an audio or video scribe, respectively.

Conclusion: Our results indicate patients and providers are more comfortable with a traditional scribe model and implementation of a telescribe model requires addressing workflow and privacy concerns of provider and patient.

3 A Qualitative Study of Medical Educators' Perspectives on Resident Remediation

Krzyzaniak S, Wolf S, Byyny R, Barker L, Kaplan B, Guerrasio J / OSF Saint Francis Medical Center, Peoria, IL; University of Virginia School of Medicine, Charlottesville, VA; Denver Health Medical Center, Denver, CO; University of Colorado Hospital, Denver, CO

Background: Residency training is designed to help trainees acquire the knowledge, skills, and attitudes necessary to enter independent practice. The expectation that learners will progress through training requires that educators identify and remediate poorly performing learners. There is little published information on characteristics of effective remediation to guide best practices.

Objectives: Given the limited data on characteristics of effective remediation, the authors proposed to characterize the remediation experience from the perspective of medical educators.

Methods: The authors conducted structured focus groups to describe common methods for identifying a struggling resident, triggers for remediation, factors that contribute to remediation, and when educators characterize remediation as successful. The authors then utilized a constructivist qualitative design with conventional content analysis to evaluate the data.

Results: Nineteen physicians across multiple specialties and institutions participated. Fifteen themes around remediation emerged including 8 unanticipated themes not addressed in the interview guide. Some themes addressed practical components of remediation (i.e. types of problems residents struggle with) while others reflected the educators' frustration with the process (i.e. barriers to implementation a remediation plan). The participants also focused on the impact that remediation has on the remediating resident and the residency community. Table includes a selection of notable domains, sub themes, and representative quotations that emerged from the analysis.

Conclusion: The results of this study demonstrate a wide variation in opinions and practices surrounding the remediation of struggling learners. This is consistent with existing work that has shown a lack of a systematic or structured approach for remediation. These findings provide additional insight that can help improve existing remediation efforts and provide guidance for future work examining best practices in remediation.

Table. Selected domains, key themes, and representative quotations around remediation.

Types of problems seen in struggling residents	Medical knowledge Interpersonal skills Clinical reasoning	"Well we see clinical reasoning deficits, especially as people transition [to a senior resident role] when they have to make high level difficult decisions."
Objective criteria for determination of remediation	Repeated poor evaluations	"And so if in a month I see a [score] below expectation[s] in an area, I sort of look at it and take note of it. If I see it twice or I see it from multiple people, that makes me pay attention to say, there might be something here and then to investigate that further."
Predictors of successful remediation	Learner insight and investment	"Insight is a key factor to success of helping a struggling learner."
Barriers to identification	Avoidance of responsibility by educator	"And so I think if there is remediation or struggle and you as a faculty person make that label, you're responsible . . . to do something about it. Take an action. I'm not sure everybody's willing to do that."
Role of program administration	PD should act as enforcer, initiate formal academic action	"The mentor cannot be the program director. Because the mentor is meant to be a coach not somebody doing an evaluation."
Actions that constitute remediation	Limit scope of practice including change in clinical schedule External resources	"And put them at a lower acuity hospital site if need-be."
Barriers to implementing remediation plan	Emotional response of faculty to learner Inexperienced faculty Learner unwilling/unable to participate in remediation	"I need to be able to be the bad cop guy on occasion and that was really hard for me to do when I had even more emotional investment in the residents." "I also think that remediation and the delays in remediation, a lot of it is training for people in how to do remediation . . . We hope that we're professional educators if we do this long enough, but our background is much different than someone who has a strictly, an educational background"
Impact of remediation on others	Resident impact: Resentment	"I found . . . residents who after a while, are angry at the fact that they have to cover for someone else."

4 An Assessment of Emotional Intelligence in Emergency Medicine Resident Physicians

Papanagnou D, Hall R, Papathomas K, Linder K / Thomas Jefferson University, Philadelphia, PA

Background: Organizational psychology literature is replete with studies that highlight the role of emotional intelligence (EI) in leadership; job performance; stress management; and burnout protection. To date, no studies address EI in emergency medicine (EM) residents.

Objectives: The authors sought to define the EI profile for EM residents, and identify strengths and weaknesses in EI competencies to better inform curricular changes.

Methods: Post-graduate year residents (i.e., PGY-1s, -2s, -3s) of the authors' EM program completed the Emotional Quotient Inventory (EQ-i 2.0) Assessment â„¢, a validated tool derived from the Bar-On psychological model of EI, and offered by Multi-Health Systems (MHS). A weblink was emailed to residents, directing them to an anonymous 133-item questionnaire. Scores were calculated electronically

by MHS; these included 5 composite scores (i.e., self-perception, self-expression, interpersonal, decision making, stress management) with 15 sub-scores on EI competencies. Differences were examined across gender, age, and training year. Scores are reported as means with 95% CIs. No incentives were offered. The study was IRB approved.

Results: 36 residents completed the EQ-i (response rate 100%). Results were normed to the general US population (mean 100, SD 15). Total mean EI was 104 (95% CI [99.8-108]); this was higher in female (107) vs. male residents (101). No differences were noted across age. Highest composite scores were in interpersonal skills (107; 95% CI [100-108]) and stress management (105; 95% CI [101-109]). Cohort competency strengths were in self-actualization (107); empathy (107); interpersonal relationships (106); impulse control (106); and stress tolerance (106). The lowest sub-category score across all years was in assertiveness (98). PGY-2s demonstrated the lowest mean EI score (95) versus PGY-1s (104) and PGY-3s (110). Self-regard, assertiveness, independence, problem solving, and optimism were lowest in PGY-2s. PGY-3s scored highest in nearly all categories.

Conclusion: EI in EM residents approximated the mean for the general population. Assertiveness was identified as a weakness across all trainees. Findings will be used to inform programmatic changes to optimize self-preservation skills in trainees, specifically in PGY-2s.

5 Assessment of Post-graduate Year Level And Unplanned Floor To ICU Transfer Within 24 Hours from the Emergency Department

Solano J, Bilello L, Chiu D / Beth Israel Deaconess Medical Center, Boston, MA

Background: Academic EDs utilize residents of different post-graduate year (PGY) levels to provide clinical care for patients under the supervision of attendings. Admitted patients that have an unplanned transfer from the floor to the ICU within 24 hours have been shown to have higher mortality and are a potential focus for quality improvement. It is unclear if the level of training of the EM resident correlates with unplanned transfers.

Objectives: To determine if PGY level of EM resident is associated with unplanned floor to ICU transfer within 24 hours from the ED.

Methods: This is a retrospective chart review with a primary outcome measure of unplanned floor to ICU transfer within 24 hours after ED admission. The variable of primary interest is PGY level. The study was done at an urban, academic tertiary care referral center with an affiliated 3 year EM residency. All patients presenting to the ED between 07/01/2012 to 06/30/2015 were eligible. Logistic regression was used to test for significance and to control for confounders such as emergency severity index (ESI), age, gender, unstable vital signs at triage, patients originally in ED observation, ED length of stay (LOS), and time to doctor. Odds ratios (OR) with 95% confidence interval (CI) was used as the primary effect estimate.

Results: We reviewed the records of a total of 60,609 admitted patients. Of these 1,769 (2.9%) were unplanned transfers from floor to ICU within 24 hours. The odds ratios of primary provider roles as predictor of floor to ICU transfers is included in Table. Of note none were significant predictors with p-values all > 0.05. While with each EM PGY level there is a decrease in the ORs of unplanned floor to ICU, this is not significant. Unstable vital signs at triage, age, ESI, ED LOS, original ED observation status that required admission, time of arrival to time seen by physician, and gender were significant predictors of unplanned floor to ICU in 24 hours with a p-value of < 0.05.

Conclusion: This data shows that there was no significant difference between the PGY level of the EM resident and unplanned floor to ICU transfer within the first 24 hours. Identification of variables significantly related with unplanned floor to ICU transfer within 24 hours maybe valuable to prevent this adverse event.

Table. Odds Ratio of Primary Provider Role as Predictors of Unplanned Floor to ICU Transfers in 24 hours of Admission.

	Odds Ratio	95% Confidence Interval	p-value
EM3	0.42	(0.37-0.47)	0.45
EM2	0.43	(0.38-0.48)	0.42
EM1	0.47	(0.42-0.52)	0.37
Non-EM Residents	0.44	(0.39-0.49)	0.40
Student	0.27	(0.22-0.32)	0.99
Attending Only	0.21	(0.20-0.22)	0.14

6 Barriers to Education Scholarship for Core Educators: a Needs Assessment and Proposed Solutions

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Background: CORD seeks to support educators in their scholarly pursuits. Educators may be limited by time, funding, access to expertise, and lack of mentorship.

Objectives: To evaluate barriers educators face in performing scholarship and identify potential strategies for success.

Methods: Emergency Medicine educators completed an online survey consisting of multiple choice, rating scale, and short answer items. Descriptive statistics were reported. Qualitative analysis of short answers used a thematic approach.

Results: 205 educators participated. The most common publication was peer-reviewed research manuscript. 31% (61/197) had training in research methodology. Time constraint was the greatest barrier to scholarship (8.61/10). There was a mismatch between actual and ideal hours spent on job related tasks. 69.8% (111/159) of researchers perform research in education. Barriers to research were lack of time, support, expertise, mentorship, funding, reward, challenges of adhering to scientifically rigorous methods, and achieving publication. The most motivating factors to performing research were personal intellectual stimulation and to be a better teacher, 7.57/10 and 6.91/10 respectively. Research study design and scientific writing were the most desired skills to acquire, 61.2% (112/183) and 49.7% (91/183) respectively. Preferred formats for developing research skills were online and a home institution faculty development course; 65/181 and 61/181 favor these respectively. 49.7% (91/183) have a mentor.

Conclusion: Multiple barriers to performing scholarship were identified and impact educators to varying degrees. Potential strategies for improvement were suggested. This information may inform interventions to help support educators in their scholarly pursuits.

7 Barriers to the Remediation of Struggling Learners: A Qualitative Study

Krzyzaniak S, Wolf S, Byyny R, Kaplan B, Barker L, Guerrasio J / OSF Saint Francis Medical Center, Peoria, IL; University of Virginia School of Medicine, Charlottesville, VA; Denver Health Medical Center, Denver, CO; University of Colorado Hospital, Denver, CO

Background: Physician trainees are expected to progress through educational milestones to achieve competence appropriate to their level of training. Meeting this expectation requires identification of the struggling resident through outcomes-based and learner-centered assessments with subsequent action taken to remediate the observed deficiencies.

Objectives: This study was designed to better understand faculty perspectives on remediation, including the barriers to the implementation of a remediation plan for struggling residents.

Methods: The authors conducted structured focus groups of regional stakeholders in medical education to explore barriers to the process of remediating struggling residents. Due to limited existing research and theory around remediation, the authors utilized a constructivist qualitative design with conventional content analysis to evaluate the data. Concepts related to barriers to remediation were identified and overarching themes were developed.

Results: Major themes identified as barriers to remediation were: (1) faculty concern about the premature labeling of residents as "struggling" and the stigma that comes with remediation; (2) limited availability of resources to devote to remediation; (3) inadequate faculty development and training around the development and implementation of remediation plans; (4) a lack of, or an unwillingness, of resident participation; and (5) a lack of consistent and honest documentation.

Conclusion: The process of remediation is hindered by the emotional response of faculty, a dearth of resources and expertise, learner factors, and a lack of honest and consistent documentation. When implementing a remediation program for a struggling resident, educators should address these elements prior to initiation of the plan.

8 Can Active Learning via the Socratic Method Improve Knowledge Retention Amongst Emergency Medicine Residents?

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Background: Socratic instruction utilizes targeted questions to expand learners' understanding of a subject. In medical education, a form of the Socratic method known as "pimping" is used, which at its best may help learners attain greater knowledge in a slightly stressful environment. Although "pimping" is a common teaching strategy for medical students, it has not been studied as an educational tool for Emergency Medicine residents.

Objectives: The focus of this pilot study was to assess Emergency Medicine residents' perceptions of "pimping" and to evaluate whether teaching via Socratic instruction can enhance knowledge retention amongst residents compared with a standard lecture format.

Methods: This was a prospective, randomized-controlled study performed during emergency department shifts at an urban, academic hospital. Groups of 3-4 residents received a bedside teaching session on head trauma either in a Socratic method i.e. "pimping" style or a lecture style. Groups were taught by one of two emergency physicians trained via an online module and a live session. Residents were asked the same pre-defined set of questions during the session. Afterwards, both groups completed a questionnaire assessing their perceptions of "pimping". Four weeks after the teaching session, residents completed a follow up quiz.

Results: 72 residents participated in our study. Results of our questionnaire showed that 54% of residents found "pimping" to be an effective teaching method most or all of the time. 82% would use Socratic instruction as a teaching method at least some of the time.

57 out of 72 residents (79%) completed the follow up quiz. Average scores were identical for residents in the "pimping" group (66.2%) compared with the non-pimping group (65.9%). Interns in the "pimping" group had higher average scores than those in the non-pimping group (59.6% compared with 52.9%).

Conclusion: Despite the practice of "pimping" falling somewhat out of favor, our data indicates that residents have a favorable view towards this educational modality and most would use it as a teaching strategy. Although a difference in knowledge retention between the two groups was not demonstrated, larger studies are needed to evaluate the value of Socratic instruction.

9 Career Satisfaction and Continued Educational Experiences

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Background: Despite increasing popularity as a specialty choice, emergency medicine (EM) continues to have problems with physician burnout. A recent Medscape survey placed EM as the specialty with highest number of physicians reporting burnout (51%). Many factors have been associated with burnout/career satisfaction, but there is little data on how continued educational experiences affect these outcomes.

Objectives: To assess career satisfaction and factors affecting career satisfaction in a group of community emergency physicians attending an international educational conference.

Methods: A mobile app survey using CrowdCompass was administered in October 2015, during a large international conference (Essentials of Emergency Medicine) asking the following two questions: On a scale of 1-5, how satisfied are you with Emergency Medicine as your medical specialty?" and the free response question: "What have you done and/or what can be done to improve your career satisfaction?". Concept codes were developed with an inductive approach and each response was coded based on the concepts present. If a response contained multiple concepts, it was coded once for each concept it contained.

Results: Of 1753 conference attendees, 391 responses were collected for the question asking respondents to rate his/her career satisfaction. There were 348 respondents (89%) who rated her career satisfaction as a 4 or 5 on the Likert scale (satisfied or very satisfied respectively). For the free response question, 219 responses were obtained. The top three most coded concepts were shifts/scheduling (45, 21%), work-life balance (38, 17%) and continued medical education/conference attendance (21, 10%).

Conclusion: Community emergency physicians who attended a large international educational conference have high rates of career satisfaction. This is higher than the 65.2% reported to have "high satisfaction in a previous study. Top contributors to career satisfaction are scheduling/shift burden, work-life balance, and continuing medical education. Although previous studies have shown lack of opportunity to attend conferences to be associated with burnout, our qualitative data shows that participating in educational conferences is a top contributor to increased career satisfaction.

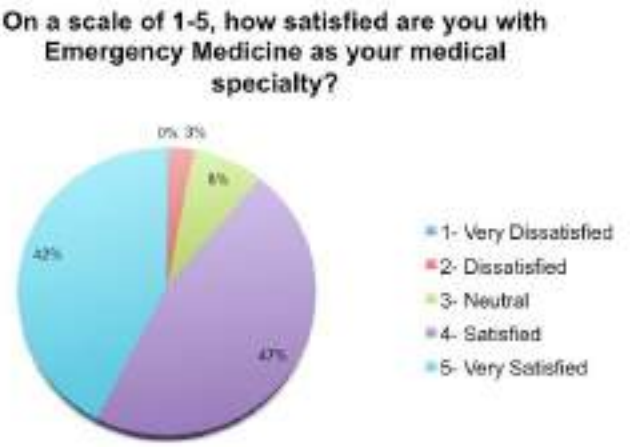

Figure.

Table.

Concept Codes	Frequency Coded	Percentage of Responses
Shift burden/Scheduling	45	20.5%
Work-Life Balance	38	17.4%
Conferences/Medical Education	21	9.6%
Administrative Burden	17	7.8%
Clinical Support	13	5.9%
Teaching/Academics	11	5.0%
Diverse Work Environments	8	3.7%
Positive Thinking	7	3.2%
Systems Issues	6	2.7%
Sense of Community	6	2.7%
Respect/Autonomy	6	2.7%
Complete change in work environment	3	1.4%
Salary/Compensation	3	1.4%
Litigation/Malpractice	2	0.9%

10 Comparison of the Efficacy of High-Fidelity Patient Simulation Versus Traditional Lecture-based Didactics in Emergency Medicine Toxicology Education

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Background: High fidelity patient simulation (SIM) has been gaining widespread use in medical education. Evidence regarding advantages in both knowledge retention and learner satisfaction is growing. There is scant data pertaining to instruction in toxicology, where SIM is particularly appealing.

Objectives: We compared two models of toxicology education - one involving simulated toxicology cases, and the other using a more traditional, lecture-based approach, with an effort to determine the efficacy of patient simulation in

Emergency Medicine Toxicology education.

Methods: DESIGN - Prospective, randomized study comparing performance on pre- and post-test within a specific education modality. A satisfaction survey was used to assess the participants' subjective experience with the SIM cases. SETTING -The study was conducted at a large academic institution with a Toxicology consult service. PARTICIPANTS - Residents and medical students rotating through the toxicology department at a single academic institution, over one academic year.

INTERVENTIONS/OBSERVATIONS - Three toxicology cases were presented during a month-long rotation using either the SIM- or lecture-based format. For each case, participants were randomized to one of two learner groups, varying by the teaching modality applied. Knowledge gained was quantified by comparing their performance on pre- and post-test written assessments. Improvements in scores of the SIM group were compared to those of the lecture group. A survey assessing the participants' subjective experience in the SIM cases was sent.

Results: A total of 22 rotators participated in the learning modules, of which 14b completed the pre-and post-tests for data collection. There was no statistical difference in pre-test scores (mean 2.62 points, p=0.43, 95% CI of [-9.35 to 4.11]) amongst the 2 groups. There was significant improvement in scores after both learning modalities (SIM: mean 17.21, p=0.0016, 95% CI of [7.3-27.08]; Lecture: mean 9.72, p=0.0016, 95% CI of [3.9-15.5]). The SIM group experienced a higher jump in their scores, compared to the lecture group (mean 10.08, p=0.0057, 95% CI [3.27-16.9]). Five participants responded to the satisfaction survey and all felt that participation in SIM improved their confidence, engagement, and clinical knowledge.

Conclusion: While both the SIM- and lecture-based format improved toxicology knowledge, the SIM modality was more effective. This pilot study suggests that SIM can be a useful educational tool in toxicology education.

11 CPR Education in Schools: A Novel Approach to Bystander CPR Disparities

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Background: Community CPR initiatives represent an important mechanism for increasing CPR awareness, particularly in lower-income areas which tend to have a higher incidence of out-of-hospital cardiac arrest coupled with lower rates of bystander CPR. CPR education within school systems remains a novel approach to address these bystander CPR disparities.

Objectives: Implement a sustainable Hands-Only CPR education program in Denver and Aurora middle schools with a focus on schools in lower-income areas, and evaluate the effect of the intervention on student CPR knowledge and comfort.

Methods: Participants: Over 30 middle schools (grades 6-8) in the Denver and Aurora school system were offered the opportunity to participate during the 2014 calendar year based on location and proportion of lower-income population, and 16 of them agreed.

Intervention: Participants completed a pre-test survey prior to the intervention consisting of 5 questions to assess baseline CPR knowledge and a 6th question to assess overall comfort performing CPR. The classroom teacher then initiated the standardized Hands-Only CPR training session using the CPR in Schools Training KitTM, which includes an instructional DVD, 10 inflatable manikins, and additional resources for the facilitator. Participants then completed a post-test knowledge and comfort survey, identical to the pre-test survey.

Data Analysis: A McNemar's test was performed on all aggregate paired pre-/post-test data, and chi square and unmatched pairs t-tests were performed on any aggregate unpaired data.

Results: Among the 16 participating sites, 12 (75%) returned training data, resulting in 1884 students trained. Analysis of pre- and post-test data demonstrated an increase in the mean number of CPR knowledge questions answered correctly from 2.22 to 4.1 (out of 5) ($p<0.001$). The majority of students (80.7%) felt comfortable performing Hands-Only CPR after the intervention.

Conclusion: Middle school students in the Denver and Aurora school system demonstrated increased knowledge and comfort with Hands-Only CPR following standardized instruction with CPR in schools training kits. Thus, a CPR education program for students is a novel yet promising way of increasing CPR awareness in areas with high incidence of out-of-hospital cardiac arrest yet low rates of bystander CPR.

Table. Pre-/Post-test Survey Results.

Topic Tested	Correct on Pre-Test (N=1,679)		Correct on Post-Test (N=1,679)	
	n	(%)	n	(%)
Compression rate	273	(16.3)	1,041	(62.0)*
When to stop CPR	838	(49.9)	1,520	(90.5)*
Depth of compressions	789	(46.9)	1,553	(92.5)*
What an AED does	934	(55.6)	1,387	(82.6)*
Correct steps of HOCPR	894	(53.3)	1,403	(83.6)*
Comfort performing HOCPR ‡	932	(55.5)	1,355	(80.7)*
Mean Score (Questions 1-5)	2.22	(44)	4.1	(82.2)*

*p<0.001
‡ Pre-Test n=1,679, Post-Test n=1,679

12 Cultural Competency Training in Emergency Medicine

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Background: The Emergency Department is widely regarded as the epicenter of medical care for diverse and largely disparate types of patients. Physicians must be aware of the cultural diversity of the patient population they care for to appropriately address their medical needs. A better understanding of residency-preparedness in cultural competency education can ultimately lead to better training opportunities and patient care.

Objectives: The objective of this study is to assess residency and faculty exposure to formal cultural competency programs and future plans for diversity education.

Methods: A short survey was sent to all 168 ACGME program directors through the Council of Emergency Medicine Residency Directors (CORD) listserv. The survey included drop-down response options in addition to open-ended input. Descriptive and bivariate analyses were used to analyze the data.

Results: The preliminary response rate is 25.0%. Results show that 73.8% of residency programs include cultural competency in residency didactics. Only 12.2% of these programs include residency education on all topics of interest, including race and ethnicity, gender identity and sexual orientation, patients with limited English proficiency (LEP), and social determinants of health. 40.5% of programs have training for faculty, primarily utilizing lectures or didactics. 95.2% of programs are interested in a universal open-source cultural competency curriculum.

Conclusion: Most programs have made efforts to better resident education in regards to cultural competency. Some faculty members also receive cultural competency instruction through didactics or lectures. There are gaps, however, in types of cultural competency training and many programs have expressed interest in a universal open-source tool to improve cultural competency for Emergency Medicine residents.

13 Current Practice In The Transitions Of Care For Patients Discharged From The Emergency Department

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Background: Emergency physicians (EP) and primary care physicians (PCP) believe that the transition of care to the outpatient setting is important. However, limited data exist discussing transitions of care from the emergency department (ED) to the primary care setting (PCS).

Objectives: To characterize the current practices in the transition of care of patients from the ED to the PCS.

Methods: This was a prospective survey based on literature review and modified Delphi technique. A pilot survey was initially created to evaluate for face and content validity. This survey was then administered at 8 different clinical sites. A total of 52 EP and 49 PCP were surveyed in a variety of clinical settings. A qualitative analysis was performed by 2 independent coders who classified answers by pre-defined themes (IRR > 80%). Participant's answers could cross several pre-defined themes within a given question. If a discrepancy occurred, the reviewers discussed to achieve consensus. Chi-square was performed between the two groups.

Results: Seventy five percent of ED and PCP felt the most important reason for communication was to establish follow up (44/52 EP vs 28/49 PCP, p=0.002), followed by 46% who felt communication was necessary to assist with management of the patient's condition and disposition (31/52 EP vs 16/49 PCP, p=0.006). Similarly, 92% of respondents reported improved patient care as the most important reason for EP to communicate with PCP. Fifty-seven percent of PCP felt they should be notified by the ED > 80% of the time, whereas 87% of EP reported notifying the PCP < 20% of the time. When discussing barriers to effective communication, 50% of participants stated communication logistics (34/52 EP vs 17/49 PCP, p=0.002), followed by 47% who felt setting/environmental constraints (28/52 EP; 20/49 PCP, p=0.19), and 31% who stated suboptimal electronic medical records (11/52 EP vs 21/49 PCP, p=0.019).

Conclusion: PCP and EP were congruent when asked about the circumstances and the importance for communicating follow up after a patient had visited the ED. The majority of PCP felt they should receive communication from the ED for follow up, however the vast majority of EP reported they did not. Communication logistics was the most frequent barrier cited by both EP and PCP. Further research should focus on overcoming barriers to communicating between EP and PCP.

14 Defining Emergency Medicine Residency Training Outcomes Using Delphi Method

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Background: Every year, medical students compare residency training programs and develop their personal rank list in preparation for Match Day. There are multiple factors that are considered in the decision, including overall program quality. Despite external sources attempting to define program quality, EM as a specialty has not defined training outcomes that are most valued.

Objectives: The purpose of this study is to develop consensus on metrics for residency training outcomes for EM residency programs through engagement with multiple stakeholders in the training process. This will allow standardized program assessment and research practices.

Methods: We performed a comprehensive literature review and assembled a list of potential residency training outcomes. We then assembled a Delphi panel consisting of 32 participants whose roles were: attendings with medical education leadership positions (15), deans or department chairs (3), recent residency graduates (3), current residents (6), and medical students (5) from multiple different institutions to investigate consensus on these outcomes through two rounds of a modified Delphi protocol using a web-based survey instrument.

Results: Round 1 response rate was 100% (32/32) and Round 2 was 25/32 (78%). Of the initial 49 possible residency training outcomes, 35 were removed after round 1 due to low agreement on importance of the outcomes, 4 moved on to round two in medium agreement category, and 10 moved on to round two in high agreement. Of the 14 that moved on to round 2, consensus with a high level of agreement was achieved on 10 outcomes.

Conclusion: Our study found consensus support by our Delphi panel for a list of 10 outcomes relevant to standardized assessment of an EM residency program. These findings are useful for development of a standardized reporting method for evaluation by prospective residents as well as those evaluating training outcomes or graduates of a program.

Table. Final High Agreement Outcome Metrics for Residency Programs.

Outcome	Level of Agreement
Average Number of Adult Medical Resuscitations per Graduating Resident	High (Mean 4.52)
Average Number of Adult Trauma Resuscitation per Graduating Resident	High (Mean 4.40)
Average Number of Pediatric Medical Resuscitations per Graduating Resident	High (Mean 4.40)
Average Number of Pediatric Trauma Resuscitations per Graduating Resident	High (Mean 4.36)
Board Pass Rates for Past 5 Years	High (Mean 4.72)
Number of Months in the Standard Curriculum of Critical Care	High (Mean 4.12)
Number of Months in the Standard Curriculum of Pediatrics & Pediatric EM	High (Mean 4.20)
Number of Months in the Standard Curriculum of ED Months	High (Mean 4.36)
Program Accreditation Status	High (Mean 4.72)
Complete Residency Block Curriculum	High (Mean 4.20)

15 Development of Critical Communication Skills in a Boot Camp Simulation Curriculum for Emergency Medicine Interns

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Background: Residency programs are increasingly implementing intensive, preparatory courses prior to patient care to ease the transition from medical school to residency. These "boot camps" have demonstrated increased confidence and procedural competence of new interns, but few studies have evaluated a boot camp's ability to teach non-technical skills (NTS) such as leadership, problem solving, communication, teamwork, situational awareness, and resource utilization. The Drexel Emergency Medicine (EM) boot camp curriculum was designed to improve medical knowledge and procedural skills, and also allow for deliberate practice of the NTS required of EM physicians.

Objectives: This study aimed to improve NTS of new interns through an intensive boot camp simulation curriculum.

Methods: This was a prospective cohort study using a convenience sample of fifteen EM interns in June and July of 2015. All interns were given a short didactic presentation of the principles of NTS and then divided into three teams to participate in 9 simulation scenarios during the boot camp. Following each simulation scenario, teams were debriefed on both the medical management and the NTS required during the case. Initial and final simulation scenarios during the boot camp were observed and scored by two independent raters using a previously validated assessment tool, the Ottawa Crisis Resource Management Global Rating Scale (GRS). A paired t-test compared initial and final NTS performances during the boot camp. The interns also completed a survey to self-assess their improvement in NTS.

Results: Results demonstrated a statistically significant improvement in overall NTS, leadership, problem solving, communication, teamwork, and resource utilization skills (Figure 1). Communication skills had the highest rate of improvement, with initial average team scores of 3.5 increasing to 6.5 on the seven point GRS ($p<0.001$). The inter-rater reliability was Kappa = 0.5851, 95% CI [0.4844-0.6858]. Self-assessed improvement in NTS also showed that the interns believed all domains of NTS improved, with communication again having the highest degree of improvement (Figure 2).

Conclusion: Critical communication and other NTS can be improved over the course of a two-week boot camp through a simulation boot camp curriculum.

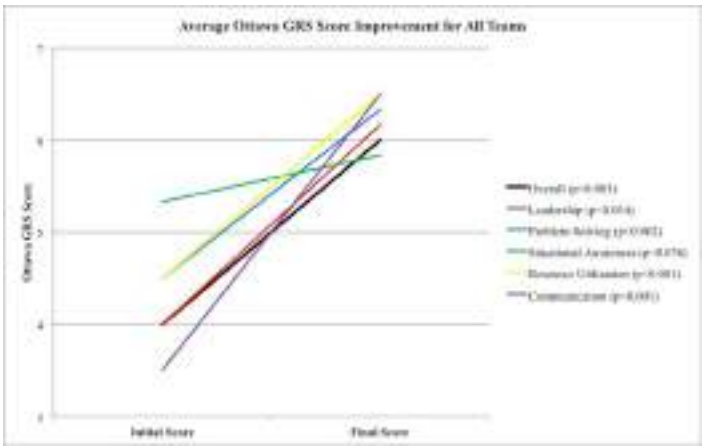

Figure 1.

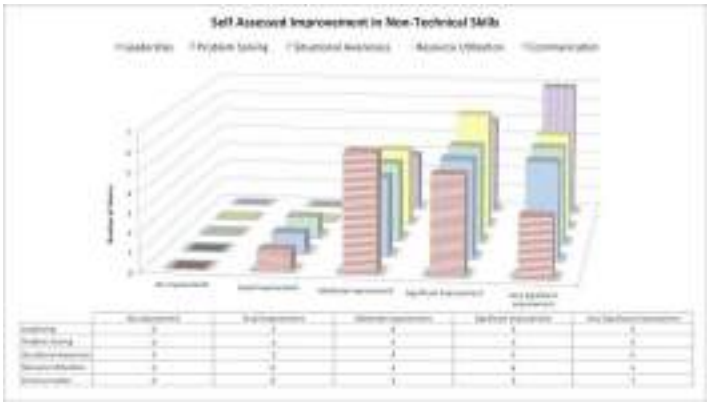

Figure 2.

16 Do Medical Students Match into Emergency Medicine Programs where they Rotate?

Micciche D, Reid E, Desai S / University of Kentucky College of Medicine, Lexington, KY

Background: Visiting rotations have become an increasingly important part of the application process to Emergency Medicine residency programs. Most programs require that students submit applications containing at least one Standardized Letter of Evaluation (SLOE) from an institution other than their own, which necessitates visiting rotations. However, there is little information regarding the effect of visiting rotations on the matching of medical students to EM residency programs.

Objectives: Our goal was to examine whether or not medical students are matching at residencies where they complete visiting rotations, with the hypothesis that visiting rotations would have a positive effect on an individual's chances of matching at a particular program. We also asked questions about the awarding of interviews to applicants.

Methods: We preformed a cross-sectional survey of program administrators subscribed to the CORD listserv after completion of the 2015 Match. Questions focused on specific demographics of individuals who matched into residency in emergency medicine, as well as the interview practices of residency programs in regards to away rotators.

Results: Survey responses from 67 separate institutions were analyzed, accounting for 757 residency positions. Of these positions, 38.4% went to medical students who rotated at the institution into which they matched. Furthermore, 15.3% of those spots went to medical students that were based at that institution, while 22.5% of the spots went to students who completed a rotation as away students. 62.2% of the positions were awarded to individuals who did not rotate at the program where they matched. The differences between these three percentages were statistically significant ($p<0.0001$). 62.7% of programs offered interviews to all students performing away rotations.

Conclusion: Visiting rotations have a positive effect on the matching of medical students in EM, with nearly a quarter of positions awarded to away rotators. The majority of positions are awarded to students who did not rotate where they matched. The majority of programs offer interviews to all applicants, which may help explain the higher likelihood of an away rotator matching at a program, however our analysis of the timing of awarding interviews to these applicants did not show any statistical significance.

Table 1.

Residency spots going to individuals from the home institution.	116/757	15.32%
Residency spots going to individuals who performed away rotations at that institution.	170/757	22.46%
Residency spots going to individuals who completed neither a visiting rotation nor home elective at that institution.	471/757	62.22%

Table 2.

	Positions going to individuals from that institution.	**Positions going to individuals who performed an away rotation at that program.**	**Positions going to individuals who did not participate in an elective at that program.**
Distribution of residency spots among the 42 programs that interviewed all away rotators at some time during the interview process.	72/478 (15.06%)	93/478 (19.46%)	313/478 (65.48%)
Distribution of residency spots among the 12 programs that interview students while on their visiting rotations.	23/144 (15.97%)	35/144 (24.31%)	86/144 (59.72%)

17 Do Resident Press Ganey Scores Improve during the Academic Year?

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Background: It is speculated that the "worst time to get sick" is July when new residents begin training. Press Ganey evaluations have become an important instrument for accessing physician capabilities and patient satisfaction. Our residents are actively trained with regards to patient contentment and ways to improve this metric.

Objectives: We sought to determine if Press Ganey scores improve from first to final months of the academic year.

Methods: This was a retrospective study of residents rotating in the Emergency Department over a three year time period (2013-2015). Population: All residents including: emergency medicine, internal medicine, pediatrics, and family practice scores were utilized for analysis. Only those scores known to be associated with a specific resident were tabulated and the "doctors score" component of Press Ganey evaluation was employed. Scores were delineated by month of patient encounter. Monthly scores in July (1st month of training) were compared to June (final month of training). Further analysis utilizing the last two months (May/June) and the first two months (July/August) of training years were also calculated. Statistics: Mann-Whitney with a significant P-value of 0.05. This study was approved by our IRB.

Results: A total of 2634 resident Press Ganey scores were available for analysis. Two hundred and sixty-one different resident were included of which 42 were emergency medicine. Mean overall Press Ganey score was 87.8. The average Press Ganey score in July was 87.7 (95% CI [90.5-84.44]) and mean score for June was 86.3 (95% CI [90.4-82.3], p=0.77). Mean score for the first two months of training was 88.7 (95% CI [90.5-85.9]) versus the final 2 months score of 87 (95% CI [89.62-84.38], p=0.28).

Conclusion: Though overall Press Ganey scores were very good, no significant improvement occurred from the first to final months of training for residents in the emergency department.

18 Do Students Have Access to the Data They Desire When Selecting an Emergency Medicine Residency Program?

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Background: In 2015, 1613 allopathic (MD) 4th year medical students and 739 non-4th year MD, osteopathic [DO], and international medical graduates [IMG] applied for 1821 emergency medicine (EM) residency positions at 171 programs. Many programs report using filters to screen applicants. Matched US seniors submitted a median 39 applications to obtain 19 interview offers, up from 26 applications to obtain 17 interview offers in 2009.

Objectives: To determine which factors applicants consider most important when selecting an EM residency program.

Methods: A web-based survey was sent to two thousand 3rd and 4th year medical students who were asked to select 7 factors from a list of 16 options that they would consider most important in selecting an EM residency program. Questions regarding preference for geographic location, length of training, and program accreditation type were omitted as the importance of these have previously been validated.

Results: The survey was completed by 261 students (13% response rate) of which 210 (80.5%) were 4th years. Sixty-seven percent (67.3%) of respondents were MD students, 26.5% were DO, and 6.2% were IMGs. The top seven factors applicants indicated as most important in selecting a residency program included hospital type (university vs. community vs. county; 78.2%), hours worked per shift (66.7%), number of shifts per month (63.2%), USMLE scores required for consideration (59.8%), yearly ED patient volume (56.7%), program size by current number of residents (49.4%), and cultural description of the program (48.3%); further preferences are displayed in the Table.

Conclusions: Several factors are considered by EM residency applicants, some of which (ie: USMLE scores required for consideration) are not published on program websites, possibly leading towards over application. By making certain data more transparent, students might be able to make more informed residency application decisions. Limitations of this study include absence of questions regarding elective time, longitudinal specialty tracks, and number of ICU /off-service rotations. Additionally, factors believed to be important by applicants may not be in agreement with what current/graduating residents or academic advisors would recommend.

Table. Applicant Ranking of Program Factors in Choosing an Emergency Medicine Residency.

Program Factor	Percentage of Applicants Ranking as Important (n = 261)
Hospital type - University vs. County vs. Community vs. Mix	78.2% (204)
Hours worked per shift (8 vs. 10 vs. 12)	66.7% (174)
Number of shifts per month	63.2% (165)
USMLE scores required for consideration	59.8% (156)
Hospital ED visits per year	56.7% (148)
Program size by total number of current residents	49.4% (129)
Culture description of the ED program provided by the program	48.3% (126)
Is moonlighting allowed	43.3% (113)
% DO & % IMG currently in program	42.1% (110)
Compensation & meals paid/ credit by the hospital	37.9% (99)
Number of weeks spent in the ED during intern year (R1)	37.5% (98)
(Non)-accredited fellowships	34.9% (91)
Percentage of graduates entering fellowship/academic jobs	31.8% (83)
Dedicated children's ED at the main training hospital	30.7% (80)
Research requirement vs. scholarly activity only	21.1% (55)
Total alumni from the program	6.9% (18)

19 Doctor, Interrupted: Preemptive Workflow and Accuracy of Rapid Electrocardiogram Screening for ST-Elevation Myocardial Infarction by Emergency Medicine Providers

Soares W, Price L, Mader T, Blanchard R / Baystate Medical Center, Springfield, MA; Clinical Research and Health Policy Studies at Tufts Medical Center, Boston, MA

Background: Interruptions are thought to contribute to medical errors. However, interruptions are also important to patient care in the emergency department. Prior research has failed to reliably demonstrate a relationship between interruptions and medical errors.

Objectives: Explore associations of interrupted, preemptive workflow on accuracy of interpreting interrupting clinical stimuli. We hypothesized accuracy would decrease during preemptive workflow compared to sequential workflow.

Methods: A 2x2 factorial crossover simulation trial was created. Resident and attending physicians from a single academic emergency department were invited to participate. Participants first completed a preemptive module, viewing patient presentations interrupted by clinical stimuli requiring interpretation every minute. Participants then completed a sequential module where presentations and clinical stimuli were completed sequentially without interruption. The primary outcome was accuracy of interpreting clinical stimuli, specifically electrocardiograms (ECG's) for ST elevation myocardial infarction (STEMI), during preemptive and sequential modules. Generalized estimating equation logistic regression evaluated factors, defined a priori, that influenced odds of correct ECG interpretation.

Results: 35 participants completed the study. Overall, there was no significant difference in accuracy of ECG interpretation for STEMI in the preemptive compared with the sequential module (Mean 0.89, 0.91, Paired T test p=0.21). Attending physician status (OR 2.56, CI [1.66-3.94], p<0.01) and inferior STEMI (OR 0.08, CI [0.04-0.14], p<0.01) were associated with increased and decreased odds of correct interpretation, respectively. Self reported confidence was associated with increased odds of correct interpretation in the preemptive module, but not in the sequential module. (Interaction p=0.02)

Conclusion: Preemptive interrupted workflow was not associated with accuracy of ECG interpretation for STEMI. However odds of correct interpretation during preemptive simulations were significantly decreased in ECG's participants reported low confidence in interpretation. Providers may be able to self identify "high risk" tasks prone to error in an interrupted environment.

Table.

	GEE Univariate			GEE Full Model		
Variable	OR	CI	p value	OR	CI	p value
Scenario						
Sequential (base)	1.00			1.00		
Preemptive	0.81	0.58-1.12	0.32	0.80	0.51-1.24	0.31
Position						
Intern (base)	1.00			1.00		
Senior Res	1.30	0.80-2.13	0.26	1.29	0.68-2.47	0.44
Attending	2.56	1.66-3.94	<0.01	2.40	1.42-4.05	<0.01
Type of ECG						
Normal (base)	1.00			1.00		
Anterior STEMI	1.17	0.44-3.13	0.67	0.78	0.30-2.03	0.61
Inferior STEMI	0.08	0.04-0.14	<0.01	0.06	0.03-0.11	<0.01
Mean Scenario Exam	1.01	0.96-1.05	0.83	1.01	0.96-1.06	0.62
Confidence						
Low (1-3) (base)	1.00			1.00		
High(4-5)	3.10	2.14-4.50	<0.01	3.68	2.26-6.01	<0.01

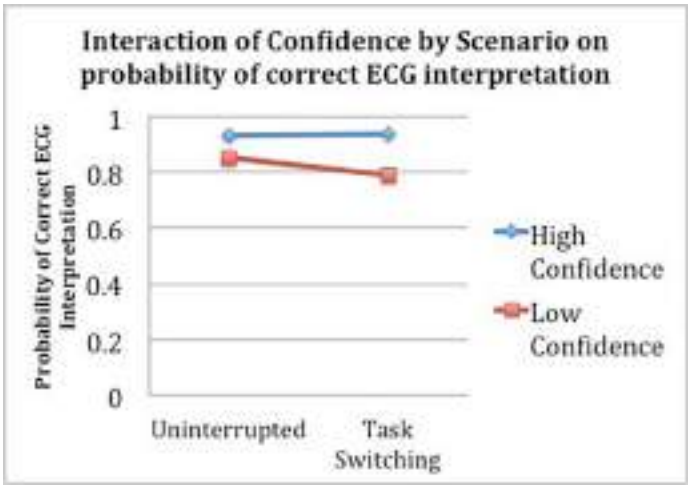

Figure.

20 Effect of an Empathy Curriculum on Emergency Medicine Resident Burnout and Patient Perception of Empathy: a Randomized Controlled Trial

Chinai S, Bird S, Lesperance D, Maranda S, Balasubramaniam M, Haskins B, Doherty S, Duncan B, Hakim N, Boudreaux E / University of Massachusetts School of Medicine, Worcester, MA

Background: Empathy is declining and burnout is increasing amongst medical providers despite empathy being an important core for the doctor-patient relationship.

Objectives: We hypothesized that an empathy curriculum would lead to decreased resident burnout and increased patient perception of resident empathy.

Methods: In this pilot study, consenting EM residents were randomized to control group or to an intervention group. The intervention was an educational curriculum which included a multi-modal approach to emphasize mindfulness, patient-centered communication, empathy, and reflection. In the pre- and post-intervention period, enrolled residents completed the Interpersonal Reactivity Index (IRI) to assess self-reported empathy and the Maslach Burnout Inventory (MBI) to assess burnout. The IRI is a 28-item questionnaire composed of 4 separate subscales. The MBI is a 22-item questionnaire composed of 3 separate subscales. A convenience sample of consented patients treated by participating residents completed the Consultation and Relational Empathy (CARE) measure about their perception of empathy from their EM resident provider. The CARE is a 10-item questionnaire. Comparisons between groups pre- and post-intervention were analyzed with repeated-measures ANOVA.

Results: 21 residents (14 male, 7 female) out of 36 eligible were enrolled: 10 in the control group and 11 in the intervention group. 1236 patients in the pre-intervention period were screened, and 273 were enrolled. 1283 patients were screened post-intervention and 308 were enrolled. On the IRI and the MBI subscales, as well as on the CARE measure, there were no statistically significant differences between the responses in the pre-and post-intervention periods ($p>0.106$).

Conclusion: Although small and powered to detect only large differences in outcomes, the intervention had no statistically significant effect on any of the IRI or MBI subscales or the CARE measure. While trends toward change in some subscales were noticed in the results they cannot be attributed solely to the intervention.

21 Emergency Medicine Resident and Medical Student Technology Use during the care of Critical Patients: A High Fidelity Simulation Study

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Background: Widespread availability of electronic resources has increased the amount of information immediately available to physicians, but it is unclear what impact this has on patient care.

Objectives: To determine if the use of electronic resources improved learners' ability to quickly and accurately manage simulated neurologic emergencies.

Methods: Emergency medicine resident teams (n=14) and clerkship student teams (n=33) managed two high fidelity simulation cases. Data collection occurred over one year, June 2014 - May 2015. In this single-blinded experimental study, teams of 2-3 were randomized to manage one case with the use of electronic resources (internet and personal computing devices). In the other case, teams had access to print resources typically available in the emergency department or on their person. Times to successful completion of critical actions were recorded. The authors used mixed-method ANOVAs where the level of the learners (residents vs. students) was a between-

groups factor and technology use (used vs. not used) was a within-groups factor to determine if technology use improved performance. To identify where technology use may have influenced specific critical actions, we used the Fisher's Exact Test to analyze 2x2 contingency tables.

Results: When teams were allowed to use technology they completed more critical actions correctly ($p<0.001$; Table 1). The contingency table analysis showed that the difference was due to the critical actions involving identifying an unknown pill ($p<0.001$; Table 2). Upon removing the pill identification items there was not a significant difference in performance when using technology and when not using technology (Table 1). Resident teams were significantly more accurate and completed the cases more quickly than the student teams ($p<0.001$ respectively; Table 1).

Conclusion: The use of technology was not related to how quickly the teams completed the simulation. Pill identification was the only critical action significantly impacted by technology use. Residents managed the cases more quickly and accurately than students. Based on these results we suspect that prior knowledge guided learners' management.

Table 1. Mixed-methods ANOVA Results.

Dependent Variable	Level of Learner		Technology Use	
	Resident Teams (n = 14)	*Student Teams (n = 33)*	*Used (n = 47)*	*Not Used (n = 47)*
Percent of Critical Actions Completed	*M* = 69.4% *SD* = 12.3% $p < .001$, $\eta_p^2 = .245$	*M* = 48.9% *SD* = 18.9%	*M* = 64.5% *SD* = 28.4% $p < .001$, $\eta_p^2 = .272$	*M* = 44.1% *SD* = 24.2%
Percent of Critical Actions Completed (Pill identification items omitted)	*M* = 82.9% *SD* = 13.3% $p < .001$, $\eta_p^2 = .255$	*M* = 60.6% *SD* = 20.3%	*M* = 69.9% *SD* = 29.4% $p = .283$, $\eta_p^2 = .026$	*M* = 61.4% *SD* = 33.4%
Time to Completion (in seconds)	*M* = 1937.64 *SD* = 409.49 $p < .001$, $\eta_p^2 = .576$	*M* = 2517.12 *SD* = 504.64	*M* = 1209.90 *SD* = 263.10 $p = .877$, $\eta_p^2 = .001$	*M* = 1235.95 *SD* = 285.86

Note: All interaction effects between level of learner and technology use were not significant ($p > .05$)

Table 2. Percent of Critical Actions Completed Correctly.

Simulated Case	Critical Action	Used Technology (n = 47)	Did Not Use Technology (n = 47)	Fisher Exact Test p values
Isoniazid Overdose Case	*Administer 1st line medication*	95.2%	80.8%	.204
	Administer 2nd line medication	71.4%	72.0%	1.0
	Identify unlabeled pill	35%	0%	.002
	Administer pyridoxine	73.7%	64.0%	.534
Intracranial Hemorrhage Case	*Medication to manage hypertension*	80.8%	55.0%	.105
	Identify unlabeled pill	61.5%	0%	<.001
	Medication to reverse coagulopathy	48.0%	50.0%	1.0

22 Emergency Medicine Resident On Shift Clinical Teaching Efficacy as Measured by Student Evaluation and Self-Reflection Using a Previously Validated Metric

Cherney A, Yenser D, Smith A, Weaver K, Worrilow C, Kane B / Lehigh Valley Health Network, Bethlehem, PA

Background: The Emergency Department (ED) is a rich and unique educational environment, though at times may be difficult to provide clinical teaching to students. It has been estimated that 33% of all student education comes from residents. While a formal teaching Milestone was dropped from early drafts, the current ACGME Emergency Medicine (EM) project mentions teaching in 6 Milestones.

Objectives: The purpose of this study is to assess students' perceptions of and senior residents' self-assessments of EM resident's clinical teaching ability while on shift in the ED

Methods: This prospective study was conducted at a hospital with a 4 year dually approved EM residency and serves as a regional medical campus. Using a previously validated metric of EM attending teaching efficacy (Steiner et al, AEM 2000), students anonymously evaluated the teaching received from a senior (PGY 3 or 4) EM resident. The resident self-assessed their teaching using the same tool. Demographic information about both study groups was gathered, including prior knowledge of or training in clinical teaching models. Data was gathered using New Innovationsâ„¢ and analyzed using descriptive statistics. This study received support from an unrestricted research grant.

Results: Over 12 months, this IRB approved study enrolled 74 students, of whom 52.7% were female. Average age was 27.9 years. Students came from 25 discrete Medical and 6 PA schools. 48, or 64.9% were MS, all of whom were 4th years. The remaining 26 (35.1%) were PA. Prior knowledge of teaching models by students was limited. Fully 86.5% had no prior knowledge of either model (SNAPPS or 1 Minute Preceptor). Enrolled residents numbered 42, with 26.2% female. Average age was 32.0 years. Prior knowledge was noted by 38.1%. Prior training was most commonly 1-4 hours (31%), with 64.3% having anywhere from 1 to >4 hours. In total, the study had 517 on-shift teaching assessments. Figure 1 demonstrates the student responses, with Figure 2 denoting the resident self-assessments. Not Enough Time denotes a survey submitted without any responses.

Conclusion: In this single site study, student impressions of resident teaching were more favorable than resident self-assessments. There appears to be room for interventions to improve EM resident teaching of students.

	Didactic	Clinical	Approachable	Helpful
Students Overall N (%)				
Outstanding	188 (36.8)	196 (37.9)	275 (53.2)	297 (57.4)
Above Average	144 (27.8)	137 (26.5)	78 (13.5)	53 (10.3)
Average	32 (6.2)	25 (4.8)	13 (2.5)	9 (1.7)
Below Average	1 (0.2)	2 (0.4)	2 (0.4)	1 (0.2)
Unacceptable	0	0	0	0
Not Enough Time	34 (6.6)	34 (6.6)	34 (6.6)	34 (6.6)
Missing	126 (24.4)	123 (23.8)	123 (23.8)	123 (23.8)
Med Students N (%)				
Outstanding	113 (32.3)	126 (36.0)	198 (56.8)	192 (54.8)
Above Average	102 (29.1)	97 (27.7)	41 (11.7)	45 (12.9)
Average	28 (8.0)	22 (6.3)	8 (2.3)	9 (2.6)
Below Average	1 (0.3)	2 (0.6)	2 (0.6)	1 (0.3)
Unacceptable	0	0	0	0
Not Enough Time	19 (5.4)	19 (5.4)	19 (5.4)	19 (5.4)
Missing	87 (24.9)	84 (24.0)	84 (24.0)	84 (24.0)
PA Students N (%)				
Outstanding	67 (40.1)	70 (41.9)	79 (47.3)	105 (62.9)
Above Average	42 (25.2)	40 (24.0)	29 (17.4)	8 (4.8)
Average	4 (2.4)	3 (1.8)	5 (3.0)	0
Below Average	0	0	0	0
Unacceptable	0	0	0	0
Not Enough Time	15 (9.0)	15 (9.0)	15 (9.0)	15 (9.0)
Missing	39 (23.3)	39 (23.3)	39 (23.3)	39 (23.3)

Figure 1. Student Assessment of Resident Teaching Using the ER Scale.

	Didactic	Clinical	Approachable	Helpful
Residents Overall N (%)				
Outstanding	25 (4.8)	25 (4.8)	48 (9.3)	24 (4.6)
Above Average	159 (30.8)	181 (35.0)	175 (33.8)	183 (35.4)
Average	147 (28.4)	125 (24.2)	112 (21.7)	126 (24.4)
Below Average	6 (1.2)	5 (1.0)	2 (0.4)	3 (0.6)
Unacceptable	0	0	0	0
Not Enough Time	129 (24.9)	129 (24.9)	129 (24.9)	129 (24.9)
Missing	51 (9.9)	52 (10.1)	51 (9.9)	52 (10.1)
PGY 3 N (%)				
Outstanding	2 (1.0)	4 (2.0)	18 (8.9)	5 (2.5)
Above Average	65 (32.3)	82 (40.8)	88 (43.8)	87 (43.3)
Average	83 (41.3)	65 (32.3)	49 (24.4)	60 (29.8)
Below Average	5 (2.5)	4 (2.0)	0	3 (1.5)
Unacceptable	0	0	0	0
Not Enough Time	34 (16.9)	34 (16.9)	34 (16.9)	34 (16.9)
Missing	12 (6.0)	12 (6.0)	12 (6.0)	12 (6.0)
PGY 4 N (%)				
Outstanding	23 (7.3)	21 (6.6)	30 (9.5)	19 (6.0)
Above Average	94 (29.8)	99 (31.3)	87 (27.5)	96 (30.3)
Average	64 (20.2)	60 (19.0)	63 (20.0)	66 (20.9)
Below Average	1 (0.3)	1 (0.3)	2 (0.6)	0
Unacceptable	0	0	0	0
Not Enough Time	95 (30.1)	95 (30.1)	95 (30.1)	95 (30.1)
Missing	39 (12.3)	40 (12.7)	39 (12.3)	40 (12.7)

Figure 2. Resident Self-Assessment of Their Teaching Using the ER Scale.

23 Emergency Medicine Trainees with High Emotional Exhaustion Are Associated with Lower Patient Satisfaction Scores

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Background: Burnout is a syndrome of emotional exhaustion, depersonalization and sense of low personal accomplishment. Emergency medicine (EM) physicians experience the highest levels of burnout among all specialties. Physician burnout is associated with lower quality of patient care. It is unknown if EM trainee burnout is also associated with poorer quality of care.

Objectives: We examined the relationship between EM trainee burnout and resident-specific Press Ganey patient satisfaction (PS) scores. We hypothesized that burnout would be associated with lower PS scores.

Methods: In this cross-sectional survey study conducted in October 2015 we assessed burnout in all post-graduate year 1-4 EM trainees at a single academic program using the Maslach Burnout Inventory. Resident-specific PS measures included: (1) likelihood to recommend; (2) courtesy; (3) taking the time to listen; (4) keeping the patient informed; and (5) concern for patient comfort. In our primary analysis overall burnout was dichotomized by high depersonalization or emotional exhaustion subscale scores and compared to PS scores using an independent samples t-test. In our secondary analyses each burnout subscale was treated as a continuous variable and compared to PS scores via linear regression.

Results: Thirty-six out of 54 (66.7%) eligible trainees responded to the survey and 27 (75.0%) reported burnout. Excluding trainees lacking PS data, mean PS scores for the remaining 20 participants were: (1) 66.8 (SD Â±11.3); (2) 70.8 (Â±11.3); (3) 67.6 (Â±11.8); (4) 62.7 (Â±12.0); and (5) 66.2 (Â±11.5). In our primary analysis there were no significant associations between overall burnout and PS scores. In our secondary analyses, however, high emotional exhaustion scores were negatively associated with all PS scores: (1) 95% CI [-0.86, -0.08], p=0.02; (2) CI [-0.88, -0.10], p=0.02; (3) CI [-0.88, -0.04], p=0.03; (4) CI [-0.92, -0.08], p=0.02; and (5) CI [-0.85, -0.02], p=0.04. There were no significant associations between the depersonalization and personal accomplishment subscales with PS scores.

Conclusions: EM trainees' emotional exhaustion scores were negatively associated with all PS scores. We did not find associations between overall burnout with PS scores, but these results may have been limited by the study's small sample size.

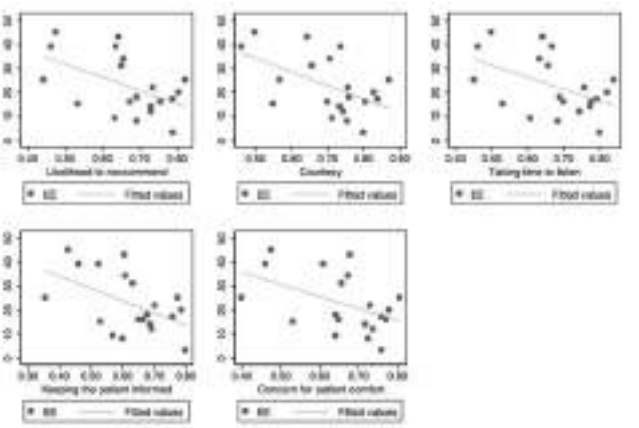

Figure. Emotional Exhaustion (EE) vs Press-Ganey Patient Satisfaction.

24 Emergency Physician Presence At Two Large Outdoor Music Festivals

Fidacaro G, Brazg J, Pushkar I, Likourezos A, Drapkin J, Fromm C, Friedman M / Maimonides Medical Center, Brooklyn, NY

Background: Music festivals are a form of mass gatherings that require unique preparation and resource allocation. These events have recently gained increased attention due to an alarming number of hospitalizations and deaths, most notably at electronic dance music festivals (EDMFs). Crowd mood is a term shown to vary with music genre and correlates with the patient presentation rate (PPR). Currently, consistent, evidenced-based recommendations regarding optimal medical staffing and resource allocation currently do not exist.

Objectives: To describe medical utilization at two large, outdoor, summertime, urban music festivals with disparate crowd moods to improve future mass gathering medical preparedness.

Methods: This was a prospective, observational study enrolling consecutive patients who presented for medical

attention at two large music festivals. One music festival, Festival2015A, was an EDMF while the other music festival, Festival2015B, featured an assorted array of music genres. The main medical tent was staffed with two EM physicians, two EM nurses, in addition to eight paramedics and 52 EMTs. A physician performed a history and physical exam, and data were recorded by medical volunteers (Figure 1). Data were then analyzed for differences between the two festivals.

Results: Festival2015A had a three-day attendance of >75,000 with a PPR of 2.3 per 1000 attendees. Festival2015B had a three-day attendance of >120,000 with a PPR of 1.1 per 1000 attendees. Festival2015A patients were more likely to have dilated pupils, diaphoretic skin and consumed more water. Alcohol and recreational drugs were more commonly abused at Festival2015A. The most common drug abused was MDMA (Figure 2). There were no deaths at either event. Transport to hospital rates (TTHR) did not differ significantly Figure 1).

Conclusion: Despite a 62.5% greater attendance level at Festival2015B, there were more hospital transports at Festival2015A. While this study is consistent with previous data showing that crowd mood is correlates with PPR, it also suggests that crowd size may be less predictive of PPR. Although the patients at Festival2015A presented with more toxidromes, the TTHR did not differe, supporting the emerging notion that an adequately staffed medical tents can reduce over-burdening the local healthcare system.

	FESTVAL A	FESTIVAL B	
TOTAL ATTENDANCE			
TOTAL PATIENTS	173	126	
AGE	22	21	
MALE	91	36	< .0001
SYSTOLIC BLOOD PRESSURE	125	138	< .01
PULSE RATE	100	90	< .05
RESPIRATORY RATE	16	16	
WATER CONSUMPTION (OZ)	24	12	< .05
DILATED PUPILS	44	25	< .05
SKIN EXAM	46	13	< .0001
ALCOHOL	152	97	< .01
DRUGS	67	42	< .05
TRANSPORT RATES	8	4	
DEATHS	0	0	

Figure 1. History and physical exam data.

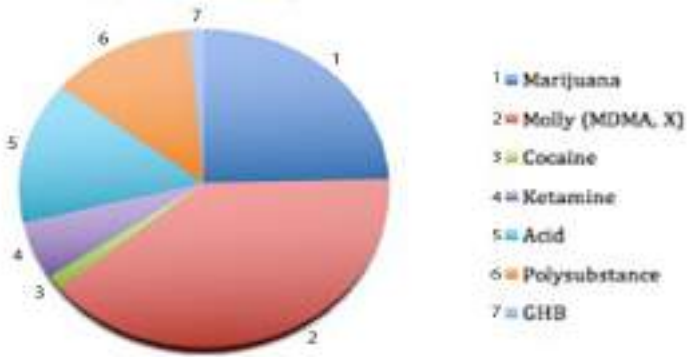

Figure 2. Type of Drug Use Festival A.

25 Engaging the Audience During Medical Simulation

Cline C, Heitz C, Fortuna T / Virginia Tech Carilion School of Medicine, Roanoke, VA

Background: Today's medical students rely on smartphones, tablets and various apps to enhance their individual knowledge. During medical simulation, the audience often passively observes team performance. While much research exists on enhancing simulation performance, little is known about audience learning methods and outcomes. Interactive software could engage observers, providing increased knowledge and skill to all participants.

Objectives: To evaluate the effect of using interactive software as a teaching tool for a simulation audience.

Methods: Early in their EM clerkship, students participated in a DKA simulation case. One student was team leader, while the others (up to 6) were observers. Students were randomized to one of two groups: Nearpod or control. Nearpod is web or app-based software which allows delivery of interactive content to learners. Students in group 1 used a web-connected device to receive questions and prompts, through the Nearpod software, during the case. Students in group 2 simply observed. All students were debriefed together. 2-3 weeks later, a 2nd DKA sim case was administered. Comparison was made between groups on performance of 7 DKA-specific critical actions. Evaluators were blinded as to group allocation. Goal recruitment is 40 students.

Results: To date, 28 students have completed the protocol. Sixteen students have been randomized to Nearpod, 12 to control. Students who used Nearpod accomplished on average 5.06 of the 7 (SD 1.4, 72.3 %) critical actions successfully vs 5.42 out of 7 (SD 1.4, 77.4 %) critical actions for those in the control group. There is no significant difference between groups (p=0.5).

Conclusion: Based on the current data, the use of interactive software to engage students during audience observation of high fidelity simulation did not result in increase performance of critical actions during a later simulation case. Further study may reveal ideal learning strategies to enhance observer education.

26 Enhancement of Cricothyroidotomy Procedural Competency using Cadaver Autograft

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Background: Cricothyroidotomy is a rare but life-saving procedure required in up to 2% of emergent airways. Emergency medicine residencies frequently instruct this procedure via cadaver training, but cadaver cost and availability

limits the opportunity for all trainees to perform the critical initial skin incision. Cadaveric autografting is a novel way to simulate all steps of the cricothyroidotomy procedure.

Objectives: To determine if cadaver tissue autografted to simulate native neck tissue improved perceived competency of cricothyroidotomy. The investigators hypothesized that autografted cadaver tissue would improve participants' self-assessment of competency.

Methods: In this prospective crossover study, volunteers were randomized to perform cricothyroidotomy initially on previously incised native neck tissue or on grafted tissue, then vice-versa. A board-certified emergency physician instructed all participants in cricothyroidotomy. The autograft consisted of cadaveric iliotibial band covered with lateral thigh skin to simulate cricothyroid membrane and native anterior neck anatomy (Figures 1 and 2). Volunteers met inclusion criteria if they were currently in residency training or participating in an emergency medicine sub-internship and had not performed a cricothyroidotomy on the study day. Twenty-seven residents and nine students participated. Outcomes were evaluated via Likert scale.

Results: Thirty of 36 (83%) of participants agreed or strongly agreed that they preferred cadaver grafting over previously incised native tissue. Thirty-two of 36 (89%) agreed or strongly agreed that performing cricothyroidotomy with a cadaver graft was useful, versus 23/36 (64%) who felt similarly regarding previously incised native tissue (p=0.001). Twenty-six of 36 (72%) felt more comfortable with cricothyroidotomy in the emergency department after using cadaveric grafting versus 19/36 (53%) who felt more comfortable after using the native tissue (p=0.003).

Conclusion: Grafted cadaveric tissue maximizes the educational potential of each cadaver by allowing multiple participants to perform cricothyroidotomy from start to finish and appears to be a useful training adjunct in this rare but essential emergency procedure.

Figure 1.

Figure 2.

27 Evaluating Resident Transitions of Care in the Emergency Department

Pierce D, Zadzilka N, Domingo G / Albert Einstein Medical Center, Philadelphia, PA

Background: Transition of care of patients between residents at change of shift happens multiple times per day in the emergency department. There are many opportunities for error in patient care to occur when there is handoff to a new team, as pertinent information may be lost. According to Kessler et al (2013 survey of program directors) effectively communicating patient care handoffs is not formally taught to most EM residents. Consequently, there are many variations in transition of care. Sinha et al (2007) suggested that a standardized sign out tool would more effectively communicate pertinent information to the next team of providers.

Objectives: Our goal was to determine the methods most frequently used in patient care handoffs at shift change and the information most frequently lost in transitioning care to a new team. Also, to assess resident's perception of safety and effectiveness of signout.

Methods: 122 residents representing 7 different Emergency Medicine residency programs in eastern Pennsylvania were surveyed while together in a conference at Einstein Medical Center. The survey data was collected anonymously, then correlated and analyzed using Excel.

Results: Figure 1 represents the range of sign out modalities reported to be used. 88% of programs use a verbal signout - either 1 to 1, group, or both. 4% use paper, and 6% do walking rounds. Figure 2 represents the residents' sense of

patient safety ensured during signout. 60% felt their signout ensured patient safety; 31% did not feel patient safety was ensured, but did not feel it was clearly compromised; 9% felt patient safety is compromised.

Residents were also asked if they thought their signouts were accurate (68% agree, 28% neutral, 4% disagree); if they thought their signouts were effective (75% agree, 16% neutral, 9% disagree); and if they were confident with the information given during signout (67% agree, 25% neutral, 7% disagree). Information missing during signout included HPI (35%), Significant PE findings (45%), Plan for ED workup (11%), Plan for disposition (31%), and Code status (1%). Only 6.5% of residents felt their signouts were not missing any relevant information.

Conclusion: Many signout tools are routinely used. Although the majority of residents are satisfied with their method of signout, a significant percentage feel that signouts lack completeness and do not ensure patient safety.

28 Evaluation of Simulation as an Adjunct to Didactics for Teaching Emergency Medical Management of Septic Shock

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Background: Simulation has been shown to be an effective training tool for Emergency Medicine providers. Its effectiveness in comparison to didactic learning is still unclear.

Objectives: To test the effectiveness of full manikin simulation as an additional teaching modality compared to didactic learning alone by comparing test scores of simulation participants to a control group. We hypothesized that test scores of simulation participants would improve more on immediate and delayed post-tests compared to control subjects.

Methods: Third-year medical students in their surgical

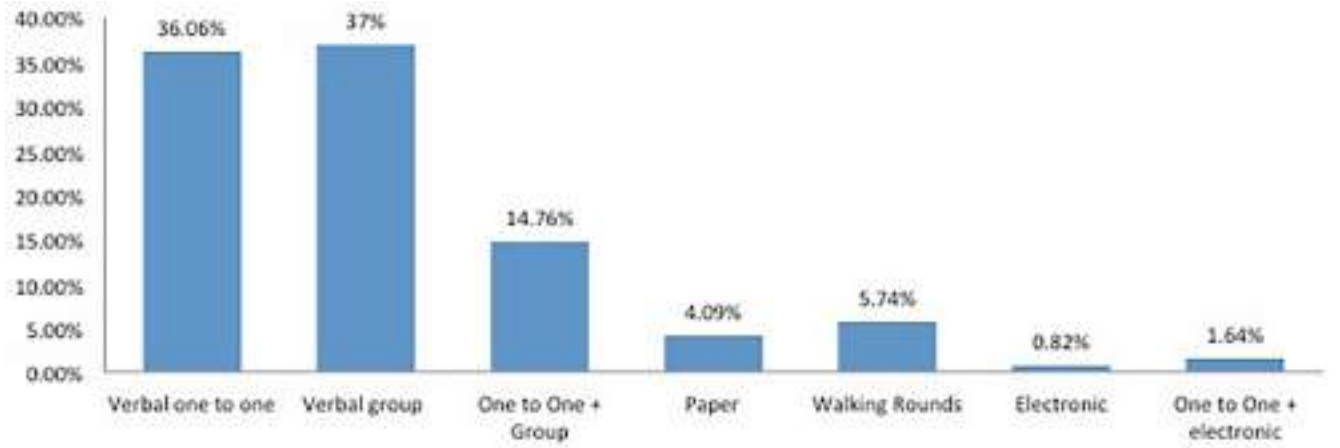

Figure 1. Sign Out Modality.

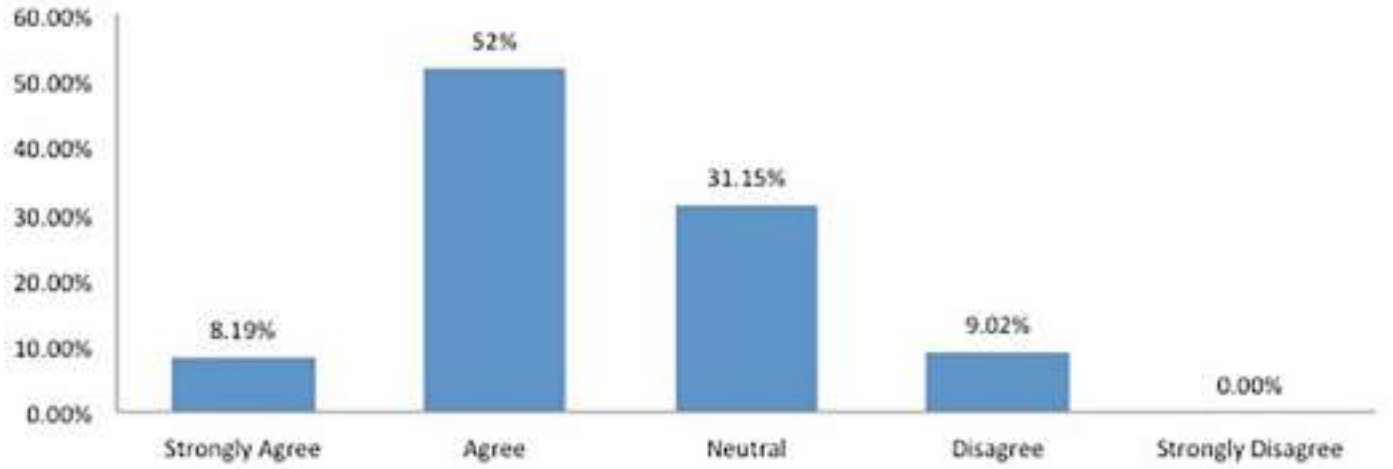

Figure 2. Patient Safety related to Sign Out.

clerkship between June and November 2015 were enrolled in this experimental study at the Yale Center for Medical Simulation. Students were randomly divided into control and experimental groups. Students who refused participation or were unable to complete pre- or post-intervention testing were excluded. All students completed a 26-question test on emergent medical management for septic shock based on the 2013 "Surviving Sepsis Campaign" guidelines. Both groups attended a didactic session based on those guidelines. Each student in the experimental group also participated in a full manikin simulation of a patient in septic shock. All students then repeated the test immediately after the didactic session and again at 12 weeks. Improvement between baseline and post-tests were compared between the two groups using Student's t-test.

Results: 54 students were enrolled in the study. 1 was excluded due to failure to complete post-testing. 25 students were placed in the control group, and 28 were placed in the experimental group. After adjusting for baseline testing, immediate post-test scores in the control group were an average of 1.69 points lower than those in the experimental group (95% CI [-3.07, -0.32]). No significant differences in scores were found between groups on delayed post-testing (95% CI [-1.75, 1.01]).

Conclusion: Third-year medical students who participated in both didactics and simulation of emergent medical management of septic shock improved more on immediate post-testing compared to students who participated in didactics alone. However, there are no significant differences in scores 12 weeks after intervention. Full manikin simulation may be a useful modality for teaching emergent medical management of sepsis, but its benefits over didactics alone may diminish after time.

29 Expectations and Outcomes for the Development of an Ultrasound Curriculum in a Resource-limited Environment

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Background: Point-of-care ultrasound (POC US) can be an invaluable tool in resource-limited settings. Emergency physicians from developed countries are increasingly traveling to such areas to teach POC US. However, how to best perform a needs assessment and develop a curriculum in an unfamiliar setting can be unclear.

Objectives: The objective of this study was to determine if instructors could design appropriate didactics for Mozambican medical students based on limited knowledge of students' backgrounds and needs, and if surveying novice learners before training would be informative for curriculum development.

Methods: Our ultrasound division traveled to Beira, Mozambique to teach a 3-day course in POC US for 5th-year medical students. It was developed based on experience conducting similar courses in developed countries and research on regional healthcare. A survey was administered to the instructors before and after the course about local morbidity and the utility of different POC US modalities. Students were given similar surveys at the same times.

Results: Overall, instructors accurately identified the diseases perceived by students as most prevalent and responsible for the most mortality; however they overestimated the rate of obstetrical complications. 75% listed it in their top 5 before the course, and 25% after. They also overestimated the extent of trauma and infectious diseases other than HIV, TB, and malaria. Regarding the utility of each POC US modality, instructors rated FASH, late OB and IV access highest before the course, and thoracic and procedural guidance highest after the course. Students rated cardiac and late OB highest before the course. These were listed in the top 3 by 80% and 70% of students, respectively. After the course, 40-50% rated cardiac, thoracic, FAST, early OB, and late OB in their top 3. No students rated IV access or procedural guidance highly at any time. Additionally, 20% of students suggested adding an application that instructors had not considered.

Conclusion: Based on limited research, instructors designed a well-received course for medical students; however, the curriculum could have been improved by several changes. Other methods of needs assessment may be indicated. Consideration of students' input before training should be taken with caution as their perspectives changed significantly after the course.

30 Faculty and Resident Perception of Mastery of Level One Emergency Medicine Milestones

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Background: Emergency medicine residents begin training with varied levels of experience. The Level 1 Emergency Medicine (EM) milestones describe elements of physician competency expected of incoming residents in emergency medicine.

Objectives: To measure the self-reported competency of all EM residents with Level 1 milestone at the start residency and to measure the concordance between resident and faculty perceptions of competency.

Methods: We conducted an anonymous online survey of all current EM residents and faculty in a Midwestern university-based EM residency program. Residents were asked to rate themselves on the ability to consistently perform each of the 37 items based on the milestones at the beginning of internship (dichotomous), and faculty were asked to rate the proportion of interns who could consistently complete each milestone task based. Descriptive statistics are reported, and ANOVA was used to compare concordance between resident and faculty responses.

Results: 18 of 24 core faculty (75%) and 23 of 26 (88%) residents completed the survey. Residents rated their initial competence higher in every category than did the faculty (mean difference 20.9%, 95% CI [4.6-43.3%]). The greatest discrepancy was for Observation and Reassessment (PC6) with 90.5% of residents rating themselves competent compared to faculty estimating that only 47.2% are competent at the start of internship. (P<0.0001). The most concordant results occurred for milestones where both faculty and residents gave lower overall ratings (PC3, PC5, PC9, PC11, PC12, PC14), which included predominantly procedural and pharmacology-based milestones.

Conclusion: EM Residents rate high self-perceived mastery of level 1 EM milestones at the start of residency, and significant discrepancies were identified between residents and faculty in perceived milestone competency. These discrepancies in perceived mastery are likely multifactorial, but may guide future development of educational interventions for incoming EM residents.

31 Faculty Evaluations: Using MyEvaluations to Increase Response Rates

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Background: Residency programs are in an era of accreditation that pressures them to evaluate their curricula and faculty with metrics that demonstrate their effectiveness. This demand can overwhelm residents with surveys, forms, and checklists, and the validity of such evaluations should be suspect, given the high volumes that are being requested. While the reliability of performance evaluation reports has been studied in the literature, the effect of when and how these evaluations are administered on the quality of data gathered is not well understood.

Objectives: The aim of this study was to evaluate

Table. Intern competency in level 1 milestones as assessed by faculty and residents.

Milestone	Level 1 Description	Faculty Mean	Resident Mean	Mean Difference (95% CI)	P-value
PC1 Emergency Stabilization	Recognizes abnormal vital signs.	73.6	95.2	21.7 (7.1-36.3)	0.0048
PC2 Focused H&P	Performs a reliable, comprehensive history and physical exam.	36.8	90.5	53.6 (33.6-73.4)	0.0001
	Communicates a reliable, comprehensive history and physical exam.	50.4	85.7	35.3 (14.0-56.5)	0.0018
PC3 Diagnostic Studies	Determines the necessity of diagnostic studies.	43.4	52.4	8.9 (-19.4 – 37.3)	0.4256
PC4 Diagnosis	Generates a list of potential diagnoses based on chief complaint and initial assessment.	32.2	81.7	53.5 (33.1-73.8)	0.003
PC5 Pharmacotherapy	Knows the different classifications of pharmacologic agents and their mechanisms of action.	46	52.4	6.4 (-21-34.8)	0.647
	Consistently asks patient for drug allergies.	47.7	57.1	9.5 (-18.6-37.6)	0.4985
PC6 Observation and Reassessment	Recognizes the need for patient re-evaluation.	47.2	90.5	43.3 (24.6-61.8)	0.0001
PC7 Disposition	Describes basic resources available for care of the emergency department patient.	55.3	66.7	11.4 (-15.0-38.2)	0.3921
PC8 Task-switching	Manages a single patient amidst distractions.	65.8	85.7	19.9 (-1.7-41.5)	0.0703
PC9 General Approach to Procedures	Identifies pertinent anatomy and physiology for a specific procedure.	60.9	66.7	5.8 (-19.9-31.5)	0.6437
	Uses appropriate Universal Precautions.	66.3	85.7	19.4 (-3.2-42.0)	0.0986
PC10 Airway Management	Describes upper airway anatomy.	56.9	81	24.1 (0.0-47.1)	0.0514
	Performs basic airway maneuvers on adult(s) (jaw thrust, chin lift, oral airway/nasopharyngeal airway) and ventilates/oxygenates patient using BVM.	50.3	90.5	32.2 (12.2-52.2)	0.0024
PC11 Anesthesia, Pain Management	Discusses with the patient indications, contraindications and possible complications of local anesthesia.	41.3	52.4	9.1 (-18.2-36.4)	0.5031
	Performs local anesthesia using appropriate doses of local anesthetic and appropriate technique to provide pain-free wide-awake anesthesia for procedures.	36.9	81	24.1 (0.2-48.0)	0.0482
PC12 Ultrasound	Describes the indications for emergency ultrasound.	52.5	57.1	4.6 (-21.8-31.1)	0.724
PC13 Wound Management	Prepares a simple wound for suturing (identifying appropriate sutures material, anesthetizing wound and irrigate).	69.3	90.5	21.4 (0.9-44.9)	0.0122
	Demonstrates needle indications.	66.2	90.5	24.3 (4.0-45.8)	0.0157
	Places simple interrupted sutures.	74.3	95.2	21.3 (8.2-36.1)	0.0049
PC14 Vascular Access	Performs a venipuncture.	63.9	81.0	18.0 (-9.2-45.2)	0.1974
	Places a peripheral intravenous line.	53.5	81.0	28.4 (3.6-53.2)	0.0386
	Performs an arterial puncture.	39.4	47.6	12.2 (-15.0-39.4)	0.3682
SBP1 Patient Safety	Adheres to standards for maintenance of safe working environment.	68.1	90.5	22.4 (8.7-47.5)	0.0139
	Describes medical errors and adverse events.	52.8	80	27.2 (3.5-51.0)	0.0258
SBP2 System-based Management	Describes members of ED team (names, relevance, severity).	70.8	81	10.1 (-15.1-33.4)	0.3933
SBP3 Technology	Uses the Electronic Health Record (EHR) to order tests, medications and documents notes and responds to alerts.	60.1	85.7	17.6 (-3.9-39.0)	0.1113
	Reviews medication for patients.	61.7	66.7	24.9 (-1.2-51.1)	0.0697
PBLI Practice-based Performance Improvement	Describes basic principles of evidence-based medicine.	51.8	71.4	19.7 (-5.6-44.9)	0.1238
PROF1 Professional Values	Demonstrates behavior that conveys caring, humanity, genuine interest and tolerance when interacting with a diverse population of patients and families.	74.4	100	25.6 (14.6-36.7)	0.0101
PROF2 Accountability	Demonstrates basic professional responsibilities such as timely reporting for duty, appropriate dress/grooming, rested and ready to work, delivery of patient care as a functional physician.	83.3	95.2	12.2 (-0.3-24.8)	0.0564
	Maintains patient confidentiality.	81.1	100	18.9 (10.0-27.9)	0.0001
	Uses social media ethically and responsibly.	77.1	100	22.9 (13.7-30.0)	0.0001
ICS1 Patient-Centered Communication	Establishes rapport with and demonstrates empathy toward patients and their families.	74.3	100	25.7 (19.6-31.8)	0.0001
	Listens effectively to patients and their families.	67.2	95.2	32.8 (25.3-40.3)	0.0001
ICS2 Team Management	Participates as a member of the patient care team.	77.8	95.2	17.5 (4.0-30.9)	0.0125

the timeliness of completion and variation of response by residents being asked to provide mid-year evaluations for EM faculty members.

Methods: 33 EM residents were randomized into 2 groups and asked to complete voluntary anonymous evaluations that assessed faculty members' interpersonal and communication skills, medical knowledge, practice based learning, and systems based practice on a scale from 1 (unsatisfactory) to 5 (Superior). Group A received all 27 faculty evaluations at one time while Group B received 5 faculty evaluations each week on the day of conference for a period of 6 weeks.

Results: The response rate for the Group A was 19.7% and 47.8% for Group B at 90 days with an overall response rate at only 33% for all faculty evaluations. The time to completion at the 90 day mark was 34.6 days for Group A and 19.6 days for Group B. The overall faculty evaluation mean score was 4.5 (Excellent {4}/Superior {5}) with 4.6 for Group A and 4.4 for the Group B.

Conclusion: Understanding the effect of the timing of requests for evaluation may allow programs to increase the number and quality of faculty evaluations.

Our findings suggest that it is beneficial to offer fewer surveys over a longer period of time to increase voluntary response rates. Trends of greater score variation were noted in Group B, but none with statistical significance.

This study has provided evidence that decreasing the number of evaluations requested at one time is will likely improve response rates and decrease form fatigue. Further investigation into the timing of requests is warranted, including number of requests, deadline for completion and length of individual evaluations.

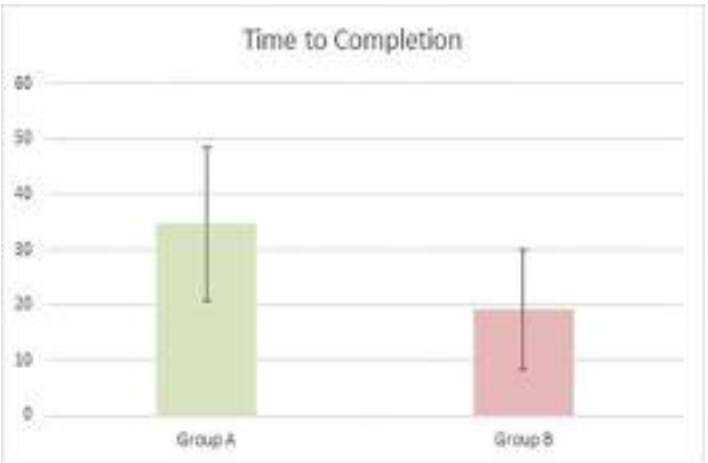

Figure 1.

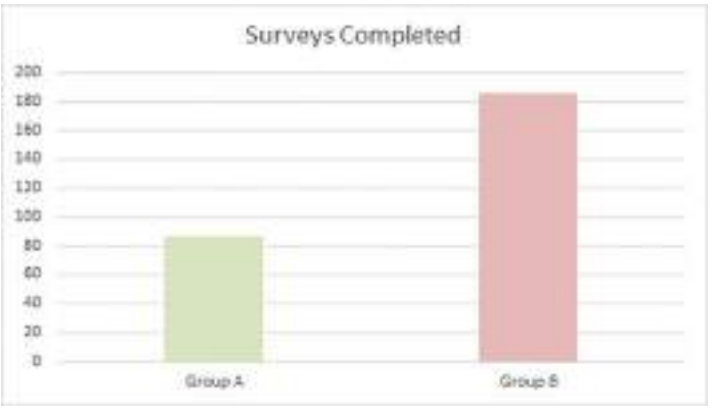

Figure 2.

32 Going with the ED Flow: Teaching and Learning Rapid Task Prioritization

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Background: Rapid task prioritization is a critical skill in the emergency department. Regularly, emergency physicians are asked to concurrently manage multiple patients at once at any given point in their shifts, and often have to make time-sensitive decisions around the priorities across multiple patients. The art and science of teaching the critical skill of task prioritization is not well described in the literature.

Objectives: In this study we sought to identify the strategies used and barriers faced by faculty members when teaching of task prioritization in the Emergency Department.

Methods: DESIGN - We conducted a qualitative study with semi-structured, critical incident interviews aimed at better what teaching and learning strategies that are employed by faculty and residents to facilitate the acquisition of emergency department (ED) management and prioritization skills. SETTING - We conducted this study at multiple teaching hospitals associated with a major Canadian academic institution. PARTICIPANTS - Both experienced physicians (nominated via a peer-nomination technique) and junior residents (postgraduate year 1 or 2) were interviewed in an effort to triangulate the experiences around teaching and learning the skill of task prioritization.

Results: Twenty physicians (10 faculty members, 10 junior residents) participated in this study. There were three main themes that emerged from our interviews in our participant's descriptions of how they taught or learned the skill of task prioritization: 1) Formal didactic teaching; 2) Observation; 3) In Situ instruction (i.e. on-the-job teaching, informal coaching in the ED). Only one teaching strategy was named by a single participant (i.e. formal teaching around the Canadian Triage Acuity Score). The bulk of teaching and learning strategies were more akin to coaching. They tended to be found within the In Situ category (Collaborative

Problem Solving; Information Conversation with Staff [i.e. Think Aloud, "running the board", walk-around rounds]). A minority of strategies included observation by learners (i.e. residents watching staff perform their duties) or by explicit role-modelling by attendings (i.e. faculty members would take residents around to show them how the job is done).

Conclusion: Although very few participants noted formal training in the area of task prioritization, both practicing academic physicians and residents were able to describe various methods by which task prioritization skills are informally demonstrated or specifically coached in the clinical environment. More research in this area may be useful in providing both faculty members and residents with useful approaches to acquiring the skill of task prioritization.

33 Holes in the FOAM: An Analysis of Emergency Medicine Residency Curriculum Comprehensiveness Represented in Online Resources

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Background: Primary literature, textbooks, and didactics compose traditional emergency medicine (EM) resident curricula. Recently, online medical education resources (OMERs), also called Free Open Access Meducation (FOAM), have become available and are utilized increasingly by EM residents. However, no studies have ascertained if there are curriculum gaps in these online resources.

Objectives: We hypothesize that OMERs represent an uneven distribution of topics across the EM curriculum.

Methods: This retrospective analysis compares subject representation in OMERs to that of the American Board of EM's (ABEM) content blueprint for the national qualifying exam.4 Included OMERs were curated from the Academic Life in Emergency Medicine (ALiEM) Approved Instructional Resources (AIR) series, which analyzes and grades online content from the top 50 Social Media Index sites within the previous 12 months following the Council of EM Residency Directors testing schedule. For content areas not yet covered by the AIR series, projected numbers were used following the ABEM content blueprint.

Results: As compared to the ABEM content blueprint, areas that demonstrated a =3% representational difference in online resources were cardiovascular (+10.9%), thoracic/respiratory (+3.0%), HEENT (-3.7%), and hematologic and infectious diseases (-5.5%) as seen in Table.

Conclusions: There is a disproportionate amount of attention paid to cardiovascular and thoracic/respiratory topics in the FOAM world. This may be multifactorial, such as having more exciting, procedurally-intensive, and/or higher acuity topics, appealing to a wider group of authors and learners. Our findings are limited because we followed the CORD testing schedule, which may not have the same representation priorities as the ABEM content blueprint. Also the AIR series was curated from only the top 50 Social Media Index sites, which may have skewed the distribution of reported OMER content. Our preliminary data showing uneven content distribution and curricular gaps in OMER topics can hopefully help guide the development of future online resources to generate a more comprehensive educational resource for learners.

Table. Subject area distribution comparing the ABEM content blueprint and OMERs from the ALiEM AIR series search. Subject areas not covered by the AIR series are in italics, along with their distribution numbers assuming that they matched the ABEM blueprint percentages. The shaded cells respresent and over-representation of OMER content compared to the ABEM blueprint. A full search was not performed for this first AIR Series module, and 14 posts may under-represent the total number for Heme/ID.

ABEM Content Blueprint Subject Area	% Representation of ABEM National Qualifying Exam	Corresponding AIR Module(s)	Number of AIR OMER posts	% Representation of AIR OMER posts	% Difference Between ABEM and OMER Content Representation
Cardiovascular	10%	Cardiology 1 & 2 Peripheral Vascular Dz	190	20.9%	10.9%
Traumatic	8.0%	Trauma [anticipated]	95	10.5%	0.0%
Signs, Symptoms, Presentations	6%	n/a	82	9.0%	3.0%
Abdominal/GI	6%	Abdominal/GI [anticipated]	73	8.0%	0.0%
Procedures, Skills	6%	n/a	73	8.0%	2.0%
Thoracic/Respiratory	8%	Respiratory 1 & 2	100	11.0%	3.0%
Hematologic + ID	7%	ID/Heme/Onc	14*	1.5%	-5.5%
HEENT	5%	HEENT	12	1.3%	-3.7%
Nervous System	7%	Neurologic [anticipated]	48	5.0%	0.0%
Toxicology	5%	Toxicology	18	2.0%	-3.0%
OB/Gyn	4%	OB/Gyn	15	1.7%	-2.3%
Psychobehavioral	4%	Psychiatry	13	1.7%	-2.3%
Environmental	3%	Environmental 1 & 2	17	4.3%	1.3%
Musculoskeletal (non-traumatic)	3%	n/a	18	5.0%	2.0%
Renal/Urogenital	3%	Genitourinary/Renal	31	3.4%	0.4%
Other	3%	n/a	27	3.0%	0.0%
Endocrine/Metabolic	2%	Endocrinology	15	1.7%	-0.3%
Immune Disorders	2%	n/a	19	2.0%	0.0%
Cutaneous	1%	Cutaneous [anticipated]	9	1.0%	0.0%
TOTALS	100%		909	100.0%	

34 How do the Previous Experiences of Medical Students Relate to When and Why They Choose Emergency Medicine as a Specialty

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Background: Little is understood about the factors that influence medical students to choose Emergency Medicine (EM) as their specialty of choice. When these students ultimately make this decision is equally mysterious. The current literature regarding the career selection process has generally focused on the differences between medical students' preferences on income and lifestyle.

Objectives: This study seeks to understand both when medical students make the decision to apply to EM as a

specialty and the experiences that drove them to this specialty.

Methods: An IRB approved cross-sectional survey study of EM bound 4th year medical students was performed. The 8-question survey explored when and why students choose EM as their specialty. The survey was distributed via e-mail the first week of March 2015 to all medical students who applied to an EM residency at 4 programs representing different geographical regions. Statistical Analysis included item description and creation of a multinomial logistic regression using timing of specialty decision as the outcome.

Results: 793/1372 (68%) M4 students responded overall to the survey. Of students who decided on EM, 110 (13.9%) chose prior to Year 3, 399 (50.4%) chose during Year 3, and 282 (35.7%) decided in Year 4 or later. A statistically significant multinomial logistic regression model was fitted (p<.001). Early exposure, presence of an EM residency program, employment in the ED, previous experience as a pre-hospital provide, and completion of a Year 3 clerkship were associated with earlier selection of EM (Table). Delayed exposure to EM until year three was associated with later selection of EM.

Conclusion: Early exposure and life experiences were associated with choosing EM earlier in a student's medical school career. The third year was identified as the most common time for definitively choosing the specialty. Directors interested in increasing student selection of EM as a career should focus on bolstering early exposure as well as considering a Year 3 clerkship.

Table. Do Medical Students Choose EM sooner based on previous experiences?

	Decided on EM during M3		Decided on EM during M4 or still deciding	
VARIABLES	Relative Risk Ratio	95% Confidence Interval	Relative Risk Ratio	95% Confidence Interval
No affiliated EM residency program at medical school	0.63 (0.16)	0.39 - 1.02	0.56* (0.15)	0.33 - 0.95
When was your first Exposed to EM				
Year 1	0.78 (0.28)	0.39 - 1.57	0.71 (0.28)	0.33 - 1.53
Year 2	1.16 (0.62)	0.4 - 3.30	1.63 (0.91)	0.54 - 4.88
Year 3	11.09* (12.43)	1.46 - 93.91	16.57** (17.74)	2.03 - 135.20
Year 4	0.89 (0.80)	0.15 - 5.16	5.41* (4.58)	1.03 - 28.41
What was your first meaningful EM exposure				
Research	1.25 (0.84)	0.33 - 4.69	0.98 (0.72)	0.24 - 4.09
Employment in ED	0.70 (0.24)	0.36 - 1.36	0.44* (0.18)	0.20 - 0.97
Required Clerkship in EM	2.01 (1.29)	0.58 - 7.04	2.74 (1.77)	0.77 - 9.72
Pre-hospital Provider	0.45* (0.15)	0.24 - 0.85	0.63 (0.22)	0.31 - 1.25
Personal Family cared for in ED	1.60 (0.94)	0.50 - 5.06	1.68 (1.04)	0.50 - 5.67
Other	0.95 (0.43)	0.40 - 2.30	0.79 (0.39)	0.30 - 2.07
Did have a Year 3 Rotation	1.42 (0.33)	0.90 - 2.23	0.45*** (0.12)	0.27 - 0.75

Outcome Comparison is Deciding before M3; Independent Variable Comparison Group is applicant at school with EM program first experience prior to medical school, first meaningful exposure was clinical shadowing; SE in parentheses; ***p<0.001, **p<0.01, *p<0.05; Hosmer-Lemeshow Not significant using deciles, Area under ROC .71.

35 How Emergency Physicians Think: A Cognitive Task Analysis of Task and Patient Prioritization in a Multi-Patient Environment

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Background: Concurrent management of multiple ill patients is an important skill in emergency medicine, especially in the environment of increasing emergency department (ED) volumes.

Objectives: The objective of this study was to determine a framework for describing how physicians think about prioritization of patients in a multi-patient scenario.

To do this, we conducted a think aloud study utilizing a simulated tracker board scenario (with multiple patient files generated by TMC and KVD) as part of a larger cognitive task analysis study.

Methods: DESIGN - Participants were asked to view and interact with a tracker board with various simulated patients and then prioritize these patients. SETTING - This study was completed at multiple teaching hospitals associated with a major Canadian academic institution between March 2014 and September 2015. PARTICIPANTS - Both experienced physicians (identified via a peer-nomination technique) and junior residents (PGY 1 or 2) were exposed to various tracker board scenarios and asked to think aloud, describing their process for prioritizing the various patients and patient-oriented tasks. ANALYSIS - Using an inductive technique, two investigators (TMC, MM) independently reviewed the transcripts from the think aloud process generating an item-based coding. This coding system was then reviewed collaboratively and used to combine the item-based codes into a cognitive task structure via an iterative process.

Results: 20 physicians (experienced n=10, junior residents n=10) participated in this study. The cognitive task of patient prioritization comprised of three components (Figure): 1) Phase 1 - Viewing the entire board to determine an overall strategy; 2) Phase 2 - Creating an archetype from patient-care information available in an initial chart (i.e. vitals, brief clinical history); 3) Creating a Relativistic Prioritization List.

Conclusion: We have generated a cognitive task analysis of how physicians think through prioritizing patients in simulated multi-patient environments. This may inform development of didactic and clinical educational materials.

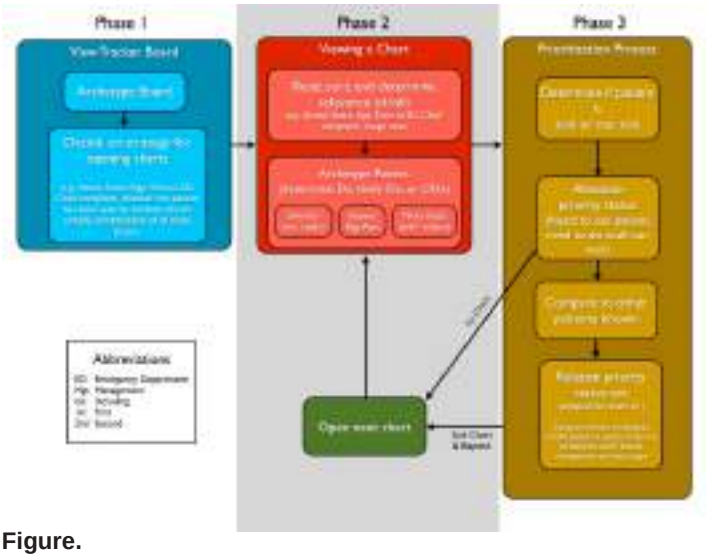

Figure.

36 Human Trafficking Didactic Session Resulted in Improved Awareness

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Background: It is estimated there are 25 million victims of human trafficking (HT) worldwide. Approximately 20,000 people are trafficked into the US annually. In 2014, less than 5100 victims were identified in the US despite the fact that up to 88% of victims of HT have contact with health care providers. This gives providers a unique opportunity to identify individuals of HT.

Objectives: The purpose of the study was to evaluate the effect of a HT presentation on participant awareness.

Methods: We performed a prospective cohort study of residents and rotating medical students in our university-based EM residency program. Participants were given a 45-minute presentation that focused on HT awareness, identification, and available resources. To assess knowledge and retention a 15 point quiz was given on three occasions. Quiz 1 was given prior to the presentation, quiz 2 was given one day following the presentation, and quiz 3 was given approximately three months following the presentation. Participants were excluded if they were unable to attend the presentation.

Results: Participants had a significant increase in HT knowledge following the presentation. There were 25 eligible participants. Two were excluded because they were unable to attend the presentation. Pre-presentation quiz and one day post-quiz were completed by 23 participants. Four participants didn't complete the 3 month post-quiz. Paired t-test analysis was performed. Mean pre-presentation score was 8.2 out of a total of 15 points. One day mean post-presentation score was 13.2 with a mean difference of 4.9 (95% CI [4.1-5.7]; p-value<0.001). Three month mean post-presentation score was 10.1 with a mean difference of 1.7 (95% CI [0.4-3.1]; p-value<0.0141). There was a significant decline between the immediate post-quiz and the 3 month post-quiz, mean difference 3.3 (2.4-4.2; p-value<0.0001).

Conclusion: One presentation significantly increased participants' knowledge of HT. Annual education is recommended to strengthen participants' abilities to identify victims of human trafficking and to maintain a high level of awareness. Future areas of investigation will focus on the ideal timing of refresher presentations on HT and whether increased awareness among residents and faculty results in increased victim identification in the clinical setting.

37 Identification and Instruction of Core ECG Interpretation Skills Necessary for Emergency Medicine Residency Readiness

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Background: Adequate knowledge and recognition of multiple ECG abnormalities is essential for residency readiness. There is no clear consensus regarding core ECG interpretation skills necessary for Emergency Medicine (EM) residency. Confidence and proficiency in first year residents in ECG interpretation skills is low. The optimal way to teach ECG interpretation skills needs further investigation.

Objectives: Determine the core ECG findings incoming EM residents should recognize.

Evaluate a flipped classroom approach to teaching core ECG interpretation skills.

Methods: We surveyed EM faculty at 7 EM residency programs to determine the most important ECG findings that incoming EM residents should recognize. We used the top 20 findings to create a test for senior medical students during their 4th year EM Clerkship. 74 students were pretested on ECG interpretation during the first week of the clerkship. Students then completed a web-based asynchronous learning module followed by a readiness assurance quiz upon module completion. Each student next attended a small group interactive discussion to review the ECG interpretation concepts plus clinical correlation questions related to the 20 ECG findings. Students were retested 2 weeks later using the same exam as the pretest. A convenience sample of 22 students was retested 1-5 months following intervention providing retention data.

Results: 106 EM faculty from 7 residency programs responded to the survey (49%). Of 44 ECG findings, 20 were selected by more than 65% of respondents. Faculty felt the majority of incoming EM residents' ECG interpretation skills were at or below expected level. Over 40% of students couldn't identify 4 of these 20 core ECG findings during pretesting (Table). Following our intervention, total ECG interpretation test scores significantly improved from pretest

to both posttest and retention (p<0.001, r=0.78), but there was not significant change from posttest to retention (p=0.99).

Conclusion: EM faculty respondents identified 20 core ECG findings imperative for a first year EM resident to recognize. Our flipped classroom approach was effective in enhancing senior medical students' recognition and retention of these core ECG findings.

Item	N	% Correct, Pre-Test	% Correct, Post-Test	Exact *p*
Ant MI	74	86.4	99.0	0.01
NSR	74	59.5	81.0	0.01
RBBB	73	84.0	99.0	0.001
AFlut	74	92.0	98.8	0.06
Brady	74	95.7	97.1	0.99
1st deg	74	74.0	85.0	0.17
3rd deg	74	74.0	96.0	<0.001
HyperK	74	96.4	99.1	0.63
Tachy	70	84.3	91.4	0.23
Inf MI	74	73.1	87.0	0.052
Lat MI	74	37.5	62.0	0.002
Post MI	74	34.8	75.0	<0.001
2nd degT1	74	80.7	93.0	0.02
Vtach	74	90.4	98.5	0.07
Vfib	74	94.4	98.4	0.38
Asyst	74	69.7	97.8	0.45
SVT	74	60.0	99.0	0.001
LBBB	74	50.4	84.0	<0.001
Afib	74	85.4	92.0	0.27
2nd degT2	74	69.1	92.0	<0.001
Mean		80.0	92.5	<0.001

Figure 1.
Note: Significance (*p*) is determined using an exact version of McNemar's dependent chi-square test.

38 Identifying Communication Behaviors Associated with Higher ED Patient Satisfaction Scores

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Background: While it is known that certain behaviors of medical providers correlate with higher patient satisfaction, there is insufficient data on which behaviors are most important. We implemented a training program called PatientSET "satisfaction every time" consisting of 4 hours of online, video CME education that included the following communication behaviors during the initial ED interaction between providers and patients: Pause before entering, Smile, Introduce yourself, Shake hands, Acknowledge the wait and apologize, Begin with open-ended question such as "How can I help you?", Overestimate Time and Perform at least 1 non-medical gesture.

Objectives: The primary objective of this study were to identify discrete positive physician-patient communication behaviors and their correlation to physician patient satisfaction scores. Additionally, providers with low compliance to the positive behaviors were retrained in order to observe the effect of the training program on behavioral compliance.

Methods: This is a retrospective review of 272 observations of 19 emergency department providers (16 physicians, 2 physician assistants and 1 nurse practitioner) at a high volume, high acuity ED. Providers were included if they had N>30 Press Ganey (PG) surveys from the previous 4 consecutive quarters and excluded if they had N<30 PG surveys. High performers were defined as having PG scores > 40th percentile while low performers were defined as having PG scores < 40th percentile. The high performers had an average PG score of 69% (N=412 total PG surveys) while the low performers had an average PG score of 14% (N=491 total PG surveys). The Low performers were observed again 6 months later after completion of the PatientSET training program. Any associations with the number of times the clinicians exhibited the positive behavior was examined using Poisson regression analysis. This analysis was conducted to compare number of times providers exhibited behaviors 1. Between high performing provid

Results: Our results detailed 8 high performing providers and 11 low performing providers as related to frequency of PatientSET behavior use. Each provider had bedside observations completed by trained observers. The results showed that being a high performing provider was associated with significantly higher frequency of 6 PatientSET behaviors (RR ranging from 1.55 to 16.76), including all behaviors except "Pause before entering" and "Introduce yourself". High performers had a higher frequency of PatientSET behaviors across 6/8 categories with a mean p value of <0.0001.

Observations were obtained 6 months later for 8 of the 11 low performers after the education intervention. After their educational intervention, low performing provider's compliance with the PatientSET improved in 4 behaviors with relative ratios (RR) ranging from 2.3 to 10.0. Overall their compliance with the PatientSET improved across all behaviors with a mean p value <0.01.

Conclusion: We conclude that using a provider education tool like PatientSET is effective in identifying behavioral modifiers that lead to improved ED provider-patient interactions. Among our high and low performing providers,

the high performing providers consistently performed the positive PatientSET behaviors. In addition, when low performers were observed 6 months later after the education intervention, they significantly improved their compliance. These specific positive behaviors may be used by ED providers to improve the patient experience.

39 Implementation of a Learner Centered Teaching Curriculum in an Emergency Medicine Residency Program

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Background: Lectures are a passive learning technique thus limiting knowledge transference and retention. Active learning formats are increasingly popular in graduate medical education as they are more engaging and preferred by learners. The effect of implementing an active learning curriculum in an Emergency Medicine (EM) residency on objective measures of knowledge, like the In-Training Exam (ITE), is unknown.

Objectives: We hypothesize that the addition of active learning to an EM residency curriculum will result in improved knowledge acquisition and retention, as measured by performance on the ITE.

Methods: This was a single center, single group, pre-post study of the effect of changing to a Learner Centered Teaching (LCT) curriculum in an EM residency training program. All residents with both 2014 (pre-) and 2015 (post-) ITE scores were eligible for inclusion. Starting in July 2014 the LCT curriculum was implemented with approximately half of the core content lectures replaced with small group discussions that included pre-discussion homework submitted in advance. Performance on the ITE was evaluated for all residents completing both 2014 and 2015 exams. The mean change in Percentile Rank on the ITE and the mean Distance from Target score, how far the subject was from their year specific goal, were evaluated with a paired t test. A secondary outcome evaluated was change in Percentile Rank and Distance from Target for the residents Below Target in 2014.

Results: 23 residents were enrolled. The mean change in percentile rank was -1.2 (95%CI -9.5-7.2, p=0.77) for all subjects and +7.4 (95%CI 3.5-18.2, p=0.13) for residents Below Target in 2014. The mean change in Distance from their Target Score was 0.7 (95%CI -1.1-2.5, p=0.44) for all subjects and 2.2 (95%CI -0.5-4.9, p=0.09) for residents Below Target in 2014.

Conclusions: Implementation of an LCT curriculum did not show a statistically significant change in ITE performance. There was a trend toward greater improvement in both Percentile Rank and Distance from Target score for residents who were below target in 2014. This study was not adequately powered to show a significant difference in ITE performance among the sub-set of residents below their target score in 2014. The impact of an LCT curriculum on ITE performance for this population is an area for further study.

Figure 1.

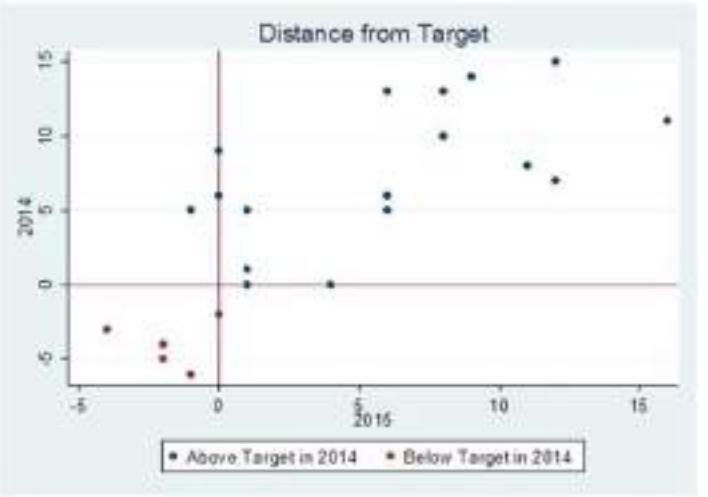

Figure 2.

40 Incorporation of Images on Presentation Slides Positively Impacts Continuing Medical Education Conference Speaker Evaluations

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Background: Although continuing medical education (CME) presentations are common across health professions, it is unknown whether slide design impacts audience evaluations of the speaker.

Objectives: Based on the conceptual framework of Mayer's theory of multimedia learning, this study aimed to determine whether text density and image use on slides affect overall speaker evaluations.

Methods: This retrospective analysis of six sequential CME conferences (two annual emergency medicine conferences over a three-year period) used a mixed linear

regression model to assess whether post-conference speaker evaluations were associated with image fraction (percent of slides with at least one image) and text density (number of words per slide).

Results: A total of 105 lectures were given by 49 faculty members. A total of 17,397 evaluations were included. On average, 47.4% (SD=25.36) of slides had at least one image, modeled as "image fraction" 0.474. Image fraction significantly predicted overall higher evaluation scores [F(1, 100.676)=6.158, p=.015] in the adjusted model. The mean (SD) number of words per slide was 25.61(8.14) but was not a predictor [F(1, 86.293)=0.55, p=.815]. Of note, the speaker [2(1)=2.952, p=0.003] and speaker seniority [F(3, 59.713)=4.083, p=0.011] significantly predicted higher scores.

Conclusion: This is the first published study to date assessing the association between slide design and CME speaker evaluations by an audience of practicing clinicians. The incorporation of images was correlated with higher evaluation scores, in alignment with Mayer's theory of multimedia learning. Contrary to this theory, however, text density was not a predictor. This suggests that predictors speaker evaluations are multifactorial. Faculty development efforts should focus on teaching best practices in both slide design and presentation skills.

41 Inside the Black Box: Using Think Aloud to Study Clinical Reasoning During Simulation

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Background: Medical educators use simulation to assess how EM trainees develop differential diagnoses. Trainees reflect retrospectively on their clinical reasoning during post-scenario debriefings. Debriefings, however, mask individual decision making due to hindsight bias and peer influence. We posit that adopting "think aloud" from cognitive psychology, in which individuals express thoughts as they occur, avoids such biases.

Objectives: Explore the feasibility of using think aloud methods during SIM scenarios to elicit how trainees, in real time, construct differential diagnoses.

Hypotheses:

1. Using think aloud methods during scenarios is feasible.
2. Think aloud methods prompt trainees to describe how they construct differential diagnoses.

Methods: All EM interns from two residency programs participate during an orientation day (n=21). This experiment generates qualitative and quantitative data by coding videos. We use convergent parallel mixed methods to analyze the data. The intervention includes group think aloud exercise (n=5,6); individual participation in two Standardized Patient (SP) scenarios (anaphylaxis, myocardial infarction); group debriefing; and individual questionnaires. We instruct interns to think aloud and SPs to ask about diagnoses during scenarios. Two blinded researchers independently code each second of 10 minute scenarios. They use content analysis, applying researcher generated predetermined descriptive codes to qualitative data. Codes include diagnoses and cues (e.g., symptoms).

Results: Using think aloud methods during scenarios is feasible. Interns think aloud as they interview and examine SPs (n=12/21 Limitation: Data lost due to technical error). Scenario 1: Interns think aloud 9.91% median of scenario time (range 1.33 - 20.95); they address SP questions for 18.77% median time (range 8.66 - 42.55). Scenario 2: Interns think aloud 14.16% median time (range 0 - 29.67); they address SP questions for 19.41% median time (range 7.19 - 49.12) (See Cassara Figure). Initial content analysis suggests that these methods prompt interns to describe how they use cues to construct differential diagnoses.

Conclusion: Thinking aloud during scenarios prompts interns to describe how they construct differential diagnoses, providing educators with vital data for assessing and remediating diagnostic reasoning.

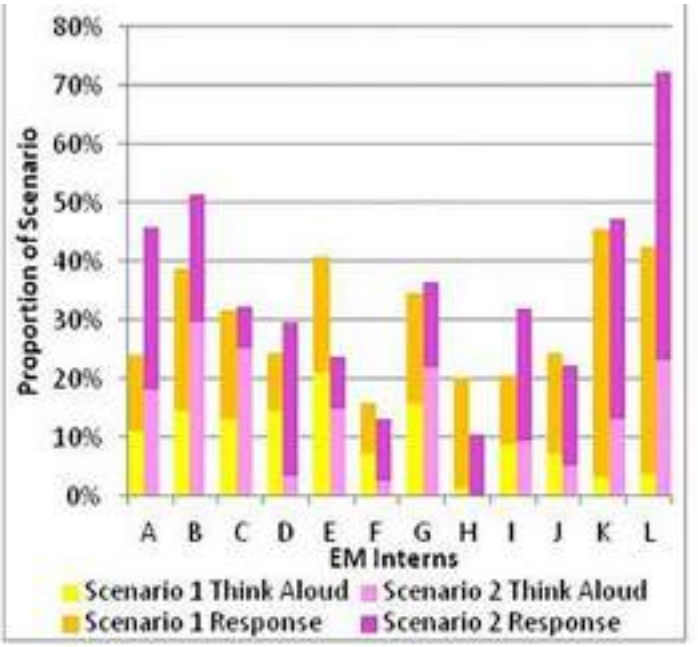

Figure. Proportion thinking aloud per scenario.

42 Multisource Feedback in a Simulation-Based Milestone Assessment of Emergency Medicine Residents

Siegelman J, Shah B, Nagrani S, Gajewski A / Emory University, Atlanta, GA

Background: Multisource feedback provides the resident learner with multiple perspectives on their performance, which is particularly useful in assessing communication skills. Prior work has shown the utility of using standardized patients (SP) to provide feedback, but we sought to compare faculty versus SP ratings in the context of a patient-centered communication (ICS-1) milestone assessment.

Objectives: We hypothesized that SP assessments of communication would differ from faculty assessments.

Methods: This was a prospective observational study conducted at a single urban emergency medicine (EM) residency program. EM year 1-3 residents participating in mandatory individual simulation assessments were assessed by both a board certified EM faculty member and a single trained SP who participated in the case. Five identical questions to assess ICS-1 were used by all raters during a fifteen minute simulated encounter about a patient with back pain, each item having a yes/no response. Faculty and SP scores for each group with percent agreement were calculated, and Cohen's kappa scores were included to account for agreement by chance. Items scored as unable to assess (UTA) were excluded from analysis.

Results: All 62 residents participated in the simulation, with 14 faculty and 1 SP serving as raters. Faculty total scores exceeded those of the SP for 60% of residents (Figure). Only 30% of total ratings from faculty and SP were in agreement. The Table details percent of ratings scored affirmatively for specific questions by each rater with kappa values.

Conclusion: Obtaining feedback from SPs in addition to faculty provided a second, often discordant assessment of the residents' communication skills. The individual rating items need validation, and may serve as a confounder in this analysis. Further work will be needed to understand the discrepancy in ratings.

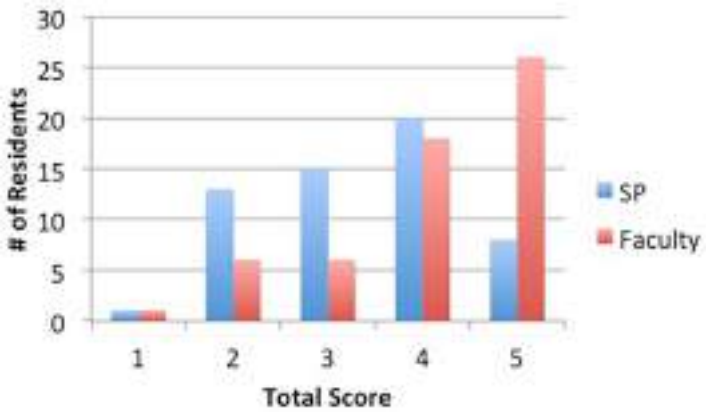

Figure. Total Score by Faculty and SP.

Table. Percent of Residents Receiving Credit for Individual Items.

	Faculty (n)	Faculty (%)	SP (n)	SP (%)	% Rater Agreement	Kappa Score
Demonstrated empathy.	53	85	45	73	88	0.34
Listened effectively.	59	95	62	100	95	N/A
Asked questions to understand the nature of back pain.	52	84	47	76	76	0.26
Respectfully communicated with patient about drug use habits.	45	74	21	34	54	0.20
Respectfully discussed reasons for not giving IV narcotics	40	69	33	57	81	0.60

43 Personal and Professional Risk of Social Media Utilization by Emergency Medicine Residents and Faculty

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Background: The use of social media (SM) platforms in emergency medicine (EM) residency programs is on the rise, yet many residents and faculty are unaware of the risk due to inappropriate SM use.

Objectives: We sought to identify frequency and differences of observed SM behavior with potential personal and professional risk to EM residents and faculty.

Methods: This is a multi-site 18-question survey study administered via the online tool SurveyMonkeyâ„¢ by e-mail to the residents and faculty in 14 EM programs and the CORD listserv. Faculty and resident responses were compared using the chi square or Fisher's exact test.

Results: There were 1,314 responses (63% male, 36% female; 40% age<30 years, 39% ages 31 to 40, and 21% age>40) with 772 residents and 542 faculty [15% Program Directors (PDs), 85% other faculty]. PDs noted the following SM postings at least once a year: 64% of non-resident peers or nursing colleagues (NRPONC) and 57% of residents in an intoxicated state; 63% of NRPONC and 57% of residents in inappropriate photographs; 76% of NRPONC and 67% of residents with inappropriate posts; and 30% of NRPONC and 22% of residents terminated or reprimanded. Residents noted the following SM postings at least once a year: 84% of peers

or nursing colleagues (PONC) in an intoxicated state; 66% of PONC in inappropriate photographs; and 73% of PONC with inappropriate posts. Residents were more likely to post PONC in an intoxicated state compared to PD-noted NRPONC (p=0.0004). PD-noted NRPONC were more likely to post inappropriately compared to residents (p=0.04).

Conclusion: EM faculty and residents are at personal and professional risk with use of SM occasionally leading to termination or reprimand. Awareness of this risk should prompt responsible SM utilization and use of CORD's SM guidelines.

44 Procedure Logging - What's Old is New Again

Gaeta T, Visconti A, Cabezon M / New York Methodist Hospital, Brooklyn, NY

Background: Residents must be able to competently perform all medical, diagnostic and surgical procedures considered essential for the area of practice. Each resident must maintain, in an accurate and timely manner, a record of all major resuscitations and procedures performed throughout the entire educational program. The program director must verify each resident's records of major resuscitations and procedures as part of the semiannual evaluation. While the advent of the electronic residency management systems (RMS) has improved compliance and ease of documentation of evaluations and storage of information, limitations in resident access to point of care documentation of procedures has led to inaccurate and incomplete documentation of ED procedures. Our hypothesis was that the addition of point of care Procedure Documentation Cards will improve the resident's ability to capture more of the procedures and resuscitations performed in the ED.

Objectives: Our hypothesis was that the addition of point of care Procedure Documentation Cards will improve the resident's ability to capture more of the procedures and resuscitations performed in the ED.

Methods: This was a prospective quasi-experimental pre-post design conducted in an urban, community based academic emergency department with 110,000 visits annually. Our EM program has 30 residents over three years. Study subjects were EM residents from the Class of 2013 and the Class of 2015. Intervention - in the 2014 academic year we introduced the availability of point of care Procedure Documentation Cards (PDC). These cards were available in the ED and collected in a lock box at our documentation station. Information regarding resident, supervising attending, procedures performed (including resuscitations) were transcribed into our electronic RMS. Variables evaluated include annual patient volume, average number of encounters per resident, average number of procedures documented, and resuscitations recorded for each graduating resident. Outcome of interest was the average numbers of graduate resident procedures/resuscitations logged before and after the implementation of the availability of point of care Procedure Documentation Cards. We provide descriptive statistics, comparisons using paired-sample t-tests (statistical significance was determined at alpha <0.05). The study was approved by our IRB with a waiver of consent.

Results: There were 11 graduated residents in the pre-group (RMS only) and 9 graduated residents in the post-group (PDC+RMS). The average number of patient encounters and admission rates were equivalent in the two study populations. The average total number of RRC required procedures recorded by graduating residents were 341 and 399, pre and post group respectively (p=0.67). Many of the RRC required procedures showed statistical improvement in number documented, however the infrequently encountered procedures showed no difference.

We found that the documentation of the average number of resuscitations recorded by a graduating resident increased after the intervention, 216 and 497, respectively. Adult medical resuscitations increased from 133 to 314 documented (P= 0.001) and pediatric medical resuscitations from 19 to 43 in the post-intervention group (p=0.019). Adult trauma resuscitations increased 51 to 111 documented (p=0.02) and pediatric trauma resuscitations from 13 to 29 (p=0.044).

Conclusion: Controlling for patient encounters per resident and patient acuity index, we found that resident documentation of RRC required procedures and major resuscitations improved with the addition of point of care Procedure Documentation Cards. Off-loading the data entry into the RMS to clerical staff costs approximately 4 hours per week, the look on program directors face during the semi-annual review - priceless.

45 Qualitative Analysis of Medical Student Reflections of Inter-Professional Experiences During Their Emergency Medicine Clerkship.

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Background: Introduction to the roles, responsibilities, and contributions of individual team members early in professional development is critical to fully embracing the value that teamwork adds to patient care outcomes.

Objectives: Gaining insight into medical student inter-professional experiences in emergency medicine(EM) settings is crucial for the assessment of inter-professional competencies in medical education.

Methods: We used a grounded theory approach to perform a content analysis of student reflective narratives about inter-professional experiences during an EM clerkship. Using Kirkpatrick's expanded outcomes typology as a conceptual framework, experiences were coded for themes and learning impact for students. Methods of analysis included counting comments within themes and Kirkpatrick learning outcome categories as well as identifying exemplar quotes to illustrate major themes. Inter-rater reliability was calculated.

Results: Four major themes related to inter-professional experiences in emergency departments were identified in the analysis: 1) an understanding the roles, responsibilities, and expertise of team members, 2) an appreciation of the establishment of a climate of mutual respect, trust, and integrity in successful inter-professional teams, 3) a recognition of the importance of encouraging ideas and opinions from other health care team members, and 4) an awareness that teamwork achieves improved patient outcomes through a coordination of individual efforts within a team. Learners describe individual reaction's (66.8%) and modifications of attitudes or perceptions (65.3%) most commonly, but acquisition of knowledge or skills (20.5%) and behavioral change (12.3%) are also described. Nurses (59%), pharmacists (35.4%), emergency medicine technicians (EMT, 36.7%) and emergency medicine service (EMS) providers (33.3%) are the most commonly reported health care professionals in narratives.

Conclusion: Qualitative analysis of student reflective narratives about inter-professional experiences during an EM clerkship can be used to understand the range of inter-professional experiences occurring within emergency departments and can potentially be used to assess what students learn from these experiences.

46 Reflections of First Year Medical Students in the Emergency Department

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Background: The Initial Clinical Experience is an innovative course designed to give 1st-year medical students the opportunity to experience a variety of clinical settings early in their medical education. In the Emergency Department (ED), these students work with multiple professionals, including physicians, nurses, pharmacists, social workers, and PAs, to develop awareness and understanding of the complex interactions that create a viable healthcare model. Currently, the majority of IPE occurs by chance in the clinical setting.

Objectives: The aim of this study is to understand 1st-year medical students' experiences in the ED through reflective journaling.

Methods: Every other week students spent Â½ day in the ED actively observing a health professional and subsequently wrote reflections regarding their experience. The authors performed a qualitative analysis using grounded theory on the reflections to determine common themes.

Results: 17 reflections were coded by 17 1st year medical students. Thirty codes were identified with the most common themes being Interprofessional Practice (65%), Communication (71%), and Patient Family Centered Care (53%). One student wrote, "With so many medical professionals interacting with and obtaining information from patients, the quality of the patient's care is contingent on the discussion between [providers]," which is coded as interprofessional practice and communication.

Conclusion: Placing students in the ED early introduces students to Interprofessional Practice and the role of other health professions. Reflective journaling reveals students' experiences and views of healthcare roles. One limitation of this study is only 59% of the reflections were labeled as "reflective." This may be due to the phrasing of prompts or lack of understanding of being reflective. Comments were provided to students each week regarding how to make their reflections more reflective.

47 Resident Education on Misdiagnosis and Quality Assurance in Emergency Medicine (EM) Training Programs

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Background: Diagnostic errors occur in up to 12% of ED patients. In addition to patient harm, misdiagnosis is a leading source of medical malpractice claims. Current ACGME requirements call for resident participation in quality improvement and patient safety activities. However, the methods residency programs use to educate residents on these topics are unknown.

Objectives: To determine the prevalence and current methods used to educate EM residents on diagnostic errors, quality assurance (QA), malpractice, and risk management. We hypothesize there is much variation in education on these topics.

Methods: This was an email survey of EM residency programs. An 11-item questionnaire was emailed to EM program directors via the CORD listserv. Questions pertained to the prevalence and modalities of resident education on misdiagnosis, diagnostic errors, QA, and malpractice. Follow-up emails were sent to non-responders. Proportions and 95% CI were calculated.

Results: Of the 168 ACGME-accredited EM residency programs, 82 programs (49%) completed the questionnaire. The proportion of programs with formal, required didactics on the

topics is as follows: diagnostic errors/misdiagnosis 83% (95% CI [74-90]), QA 88% (95% CI [81-95]), malpractice and risk management 78% (95% CI [68-87]), resident requirement to participate on departmental QA committee 90% (95% CI [84-96]). There was no statistical difference in prevalence of formal education by program length. 52% (95% CI [42-63]) of programs offer less than four hours per year of QA education. 62% (95% CI [51-72]) of programs offer less than four hours per year of education on risk management. Of programs that offer a formal curriculum on diagnostic errors, the following modalities of teaching were reported: morbidity and mortality conference 94% (95% CI [88-99]), lecture 74% (95% CI [62-84]), small group discussions 44% (95% CI [32-56]), simulation 41% (95% CI [28-54]) and web-based modules 22% (95% [CI 12-32]).

Conclusion: The majority of programs include formal didactics on diagnostic errors, QA, and malpractice but there are few dedicated hours for these specific topics. A limitation of this study is the response rate. Given the growing focus on error reduction and QA in the clinical setting, an expanded and standardized approach to education on these topics may be beneficial in EM training programs.

48 Resident Reactions to Unannounced Standardized Patients in the ED

Brazg J, Chung A, Retino C, Marshall J, Saloum D / Maimonides Medical Center, Brooklyn, NY

Background: Communication and professionalism has a significant impact on patient outcomes and satisfaction and are also two of six ACGME defined core competencies, but evaluation in medical education is a challenge. The USMLE Step 2 CS is necessary for graduation in LCME accredited medical schools and uses standardized patients to evaluate these core competencies in medical students, but is limited by artificial environments and the Hawthorne effect. In the business world, these confounders are eliminated by the use of "mystery shoppers." The equivalent in medical education is the unannounced standardized patient (USP). In our residency program, videotaped USP encounters are currently used to assess empathy and interpersonal communication skills of EM1s. However, ethical considerations and resident reaction to the use of USPs in resident education is unknown.

Objectives: To determine overall resident reaction regarding the use of USP encounters in medical education.

Methods: This was a cross sectional survey of EM residents (N=46) at an urban community academic center with 120,000 patient visits per year. Residents signed consent to participate in a study using USPs. After initiation of the program, residents were asked to fill out an anonymous survey containing twelve questions regarding the use of USPs in the ED.

Results: A total of 39/46 (85%) EM residents completed the survey (23 males, 16 females; 14 EM1s, 10 EM2s, and 15 EM3s). Almost half (43%) of EM1s admitted to feeling pressured by peers and/or faculty to participate in the training. In addition, 8 (21%) of all residents surveyed were concerned that USP interactions in the ED would affect their reputation within the residency. The survey also revealed that 17 (44%) residents felt there was educational value to a USP encounters, 17 (44%) were indifferent, and 5 (12%) saw no educational value. Only 5 (12%) residents surveyed did not believe compassion and/or empathy could be taught to EM residents.

Conclusion: While many residents believed there was educational value in the use of USPs, some were concerned that their reputations within the residency would be affected. Clearly defining educational goals may help mitigate ethical concerns such as how the data will be used.

49 Retrospective Study to Explore the Potential Benefit of an ECMO Protocol in Our Emergency Department

Frew C, Sproles L, Schiller J / Maimonides Medical Center, Brooklyn, NY

Background: Cardiac arrest is common condition treated in the Emergency Department (ED). Treatment options for this condition remain limited with poor survival rates despite multiple revisions made to advanced algorithms at our disposal. Most cardiac arrest patients are initially treated outside of a hospital setting, yet survival rates for these patients have remained at 8% for the past 30 years. However reports of survival to discharge after initiation of Extracorporeal Membrane Oxygenation (ECMO) range from 21-34%. Thus ECMO may have a role in improving survival rates for this patient population if initiated in the ED.

Objectives: Our institution sees a substantial number of cardiac arrests, as a result, we sought to explore the need for ECMO as a useful modality in cardiovascular rescue. The goal of this investigation was to establish a rationale for initiating a protocol for emergent provision of ECMO in our ED.

Methods: Three investigators conducted a retrospective cohort study of ED patients who had expired in the ED between January, 2003 and December, 2013. Electronic ED records were selected using a query of inclusion criteria consisting of patients ages 15 - 65, a diagnosis of cardiac arrest, and a disposition of "expired". The data were analyzed to determine the number of eligible patients by then using exclusion criteria comprised of signs of prolonged down time, severely impaired functional status or chronic illness, initial presentation of asystole, total arrest time over 60 minutes, and traumatic arrest.

Results: Our query identified 467 total patients in the specified time period that met inclusion criteria. A patient was considered eligible for ECMO if no exclusion criteria were met. A total of 80 patients out of the 467 (17.1%) were found to be eligible for ECMO. Patients meeting one or more

exclusion criteria totaled 342 (73.2%), and 45 charts (9.6%) were missing documentation and thus deemed ineligible.

Conclusion: ED-initiated ECMO is a promising intervention as salvage therapy for a subset of cardiac arrest patients. Given that this technology comes with significant expense and logistical challenges, ECMO must be reserved for patients meeting strict criteria. The results of this chart review suggest an existing patient population at our institution that may benefit from an ECMO protocol.

50 Revisions to National EM M4 Examinations Improve Item Performance

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Background: Two forms of the National Emergency Medicine (EM) Fourth-year (M4) Examination became available in 2011 and 2012 for assessment of students at the end of EM clerkships. The 50-item examinations assess knowledge in a published EM4 curriculum and contain items written according to published item writing guidelines. Examination performance statistics are assessed annually with a goal of revising examination items as needed to maintain average examination score of around 80% with items of varying degrees of difficulty.

Objectives: To identify items with undesirable difficulty (too high or too low), replace them with new items, and reassess performance of replaced items.

Methods: Item performance data, including difficulty score (pDiff, the percentage of students answering an item correctly), were collected using test administration software, LXRTests, from July 2014 to March 2015. Six items on V1 with pDiff > 0.95 and four items on V2 with pDiff<0.4 were replaced by new items covering the same topics. Item performance data was collected following replacement of items from July to October 2015.

Results: 1790 students completed V1 in the initial time period, during which time the average pDiff of the six items on V1 selected for replacement was 0.97 (SD 0.01). Following replacement of these six items, 1012 students completed the revised V1 and average pDiff of the revised items decreased to 0.59 (SD 0.29). Two of the six new items were noted to be particularly difficult, with pDiff of 0.14 and 0.25. When these two items were removed from analysis, the pDiff of remaining four new items was 0.78 (SD 0.12). The average V1 examination score decreased from 81.5% (SD 3.7) pre-revision to 78.2% (SD 4.2) post revision. 471 students completed V2 in the initial time period, during which time the average pDiff of the four items on V1 selected for replacement was 0.30 (SD 08). 384 students completed V2 following replacement of these four items, and the average pDiff of the four items increased to 0.76 (SD 0.05). The average V2 examination score increased from 78.4 (SD 4.4) to 83.1 (SD 5.1).

Conclusion: Replacement of very easy and very hard items on the National EM M4 Examinations resulted in improved performance in eight of ten replaced items. Ongoing revisions are planned to continue refining performance of the examinations.

51 SLOE Lower Third Ranking: Is it the Kiss of Death?

Pelletier-Bui A, Rimple D, Pasirstein M, Van Meter M / Cooper Medical School of Rowan University, Philadelphia, PA; University of New Mexico, Albuquerque, NM; Drexel University College of Medicine, Philadelphia, PA; The University of Texas Health Science Center at Houston, Houston, TX

Background: The Standardized Letter of Evaluation (SLOE) was implemented to help better understand an applicant's strengths and weaknesses, and better compare them with their peers. The questions are stratified into top 10%, top third, middle third and lower third. Many authors of SLOE's are concerned that a global assessment of an applicant in the lower third is the "kiss of death."

Objectives: Capture adherence to SLOE ranking guidelines and assess whether a ranking in the lower third adversely impacts a student's ability to match in Emergency Medicine.

Methods: : In 2015, an IRB approved survey was sent to the Council of Residency Directors' listserv regarding medical student advisement. Respondents were asked if their program adhered strictly, loosely, or not at all to the recommendation to equally distribute students within the thirds. They were asked about their interview practices and match characteristics for students in the top, middle and lower third on their global assessments.

Results: See Table.

In a separate question, sixty nine percent of respondents felt that applicants that they rated in the lower third were well suited to become respectable EM physicians.

Conclusion: Less than half of EM programs reportedly adhere to SLOE ranking guidelines strictly but most programs reportedly adhere at least loosely. Most programs interview students ranked in the lower third. Programs adhering strictly to ranking guidelines were more likely to interview students in the lower third than those adhering loosely or not at all. Given one third of respondents did not know if they matched an applicant ranked in the lower third, it is difficult to assess how many of these students actually matched. At least 28% of programs did match applicants ranked in the lower third, and programs adhering loosely to guidelines were more likely to match students from the lower third. Lastly, the majority

Table.

	#	%	*No Interviews	*<5% of Interviews	*5-15% of Interviews	*15-30% of Interviews	Skipped Question	Matched Low 1/3	Did not Match Low 1/3	Not Sure	Skipped Question
All Respondents	96		5%	36%	42%	11%	5%	28%	40%	***30%***	21%
Strict Adherence	39	41%	5%	***23%***	***51%***	***13%***	8%	26%	***41%***	28%	5%
Loose Adherence	51	53%	6%	***43%***	37%	10%	4%	***31%***	37%	31%	0%
No Adherence	6	6%	0%	***67%***	17%	17%	0%	17%	***50%***	33%	0%

*Estimated percentage of applicants interviewed with a lower third ranking (outside of the institution's home students).

of respondents who rated students in the lower third still felt these applicants would become respectable EM physicians.

52 Social Media in Emergency Medicine Resident Education: A Needs Assessment

Haas M, Huang R / University of Michigan, Ann Arbor, MI

Background: The use of social media has been well documented as an adjunct resource within the field of medical education. Platforms that fall within the broader term of "social media" include Twitter, Facebook, web logs ("blogs"), podcasts, YouTube videos and more. The field of emergency medicine in particular has embraced social media as evidenced by the rise of the FOAMed (Free Open Access Medical Education) movement. Emergency medicine residents around the country already utilize social media resources and many residency programs have started their own Twitter accounts and blogs. To our knowledge, however, no formal needs assessment data has been published on the topic to help guide the development of future resources.

Objectives: We aimed to assess the needs and attitudes of emergency medicine residents and faculty toward educational social media resources.

Methods: A voluntary, anonymous survey was developed through Qualtrics and sent via email to all emergency medicine residents and faculty of one four-year academic emergency medicine residency program in June 2015.

Results: The survey was emailed to 212 individuals with a response rate of 35% (75). Of the respondents, 39% (29) were residents with the remainder representing fellows (2) and attending physicians (44). Of the respondents, 76% already do or would consider using social media for educational purposes. Of all social media platforms, blogs and podcasts were voted to be the most useful for medical education. 44% of respondents have a Twitter account and 46% of respondents read educational blogs regularly. 95% of respondents agreed that the residency program should have a social media presence and 91% agreed that they would like to see a social media platform used for educational purposes within the residency. The Twitter content voted to be most useful for educational purposes included cases with multiple-choice questions, EKGs and radiology images. The blog content voted to be most useful for educational purposes included EKGs, critical care pearls and ultrasound pearls.

Conclusion: Of those who responded to the needs assessment, attitudes toward educational social media resources were favorable, with the majority already utilizing these resources for educational purposes or expressing an interest in doing so.

53 Teaching EPA 10: A Simulated Clinical Experience Improves Novice Medical Student Knowledge and Comfort in Recognizing Patients Requiring Emergent Care

Nelson A, Vahali S, Kornegay J, Yarris L / Oregon Health & Science University, Portland, OR

Background: Core entrustable professional activities (EPAs) are workplace activities that the AAMC has proposed all students should be prepared to perform upon entering residency. Emergency physicians are uniquely prepared to teach and assess EPA 10: â€˜Recognize a patient requiring urgent or emergent care and initiate evaluation and management.

Objectives: We hypothesized that implementing EPA 10 simulation training for novice medical students would be feasible, acceptable to learners, and increase self-reported comfort with EPA 10 functions.

Methods: All first year medical students (n = 147) participated in an EPA 10 training course within two weeks of matriculation in an observational, cross-sectional study. A week prior to the course, students attended a 2-hour introduction to EPA concepts. The course included a 20-minute introduction covering course objectives: performing an â€˜AMPLE history,' assessing an unconscious patient, completing a primary survey, and performing closed-loop communication in critical situations. Students completed four low-fidelity simulation stations, including: (1) a case-based vital signs module, (2) a standardized patient encounter involving altered mental status after syncope, (3) a simulated trauma patient evaluation after a fall, and (4) a team-based learning scenario designed

to teach and assess closed-loop communication when caring for a pulseless patient. All students completed pre- and post-intervention surveys prompting them to define an EPA and report their comfort performing EPA 10 functions.

Results: Descriptive statistics were collected for each item. Wilcoxon rank-sum tests were used to test for a significant difference in pre- and post-intervention responses for each item. 147/147 responses were collected (100% response rate). Students reported improvement in comfort in all nine EPA 10 related functions (Figure). Free text comments revealed that learners enjoyed the simulation experience, felt safe in the training environment, and reported increased awareness of their roles and limitations as providers.

Conclusion: Novice medical students who completed simulated clinical cases reported increased comfort with functions directly related to entrustment for EPA 10. This training was feasible to implement and well-received by learners.

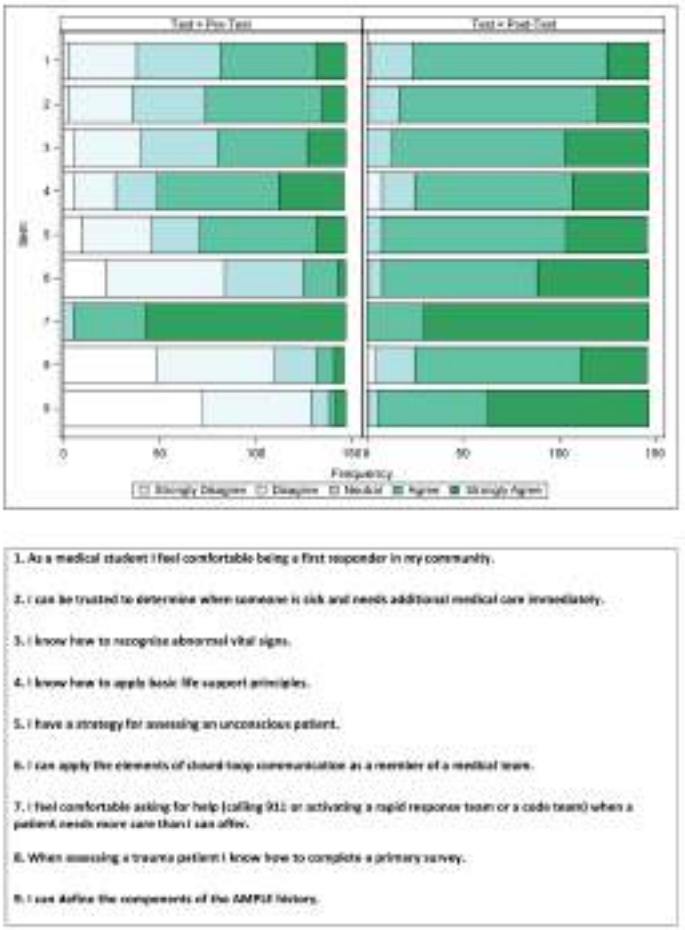

Figure. Bar chart of pre- and post-training responses by item (listed below).

54 TeamSTEPPS in Clinical Simulation Cases

Cao K, Lawson L, Brewer K / East Carolina University Brody School of Medicine, Vidant Medical Center, Greenville, NC

Background: Teamwork and communication issues have been described as the most common contributing factor to medical errors and adverse events. Despite this, few medical or nursing schools incorporate formal interprofessional team training into the curriculum. Nursing and Medicine Faculty collaborated to design a Transition to Practice simulation curriculum for senior medical and nursing students focused on interprofessional teamwork and communication skills using a modified TeamSTEPPS program.

Objectives: This study attempted to determine if there was an improvement in self-assessment and trained expert assessment of students' teamwork behavior from pre and post TeamSTEPPS clinical simulation cases.

Methods: Medical and nursing students in Pre and Post intervention groups were compared, but all students received the identical educational intervention on the day between simulated cases. Using the first group of students was used as the control group prior to the educational intervention. Using a validated TeamSTEPPS teamwork assessment, teamwork skills were assessed by students and trained faculty. Statistics used Chi Square Analysis with significance defined as $p<0.05$.

Results: 76 medical students participated in the study. Trained faculty assessment demonstrated significant improvement in the teamwork subscales of mutual support ($p=0.009$) and communication ($p=0.021$). When comparing post test of students vs faculty assessment, faculty saw significant improvement in communication ($p=0.05$).

Conclusion: TeamSTEPPS training significantly improved faculty assessment of teamwork skills in the communication and mutual support subscales that could be useful to improve teamwork and patient care. However, students in the post educational intervention group did not demonstrate higher self-assessment scores compared to the pre-intervention group. Limitations include multiple faculty assessors and unbalanced student teams that may skew assessment.

55 The CORD-EM Speaker Evaluation Form

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Background: No formal, validated speaker evaluation form currently exists to help conference planners make future decisions on speakers.

Objectives: Create a concise, effective evaluation form to be filled out by audience members to aid conference planners.

Methods: We evaluated two forms, 1) a gold standard, 8 question evaluation form used to rate speakers in classroom and competition settings (the "Competent Speaker" evaluation form), and 2) the CORD-EM form, a novel, 3 question speaker evaluation form created for the CORD-EM 2015 national conference. The Competent Speaker form was analyzed with two evaluators; the CORD-EM form was analyzed with three evaluators but randomized to select only 2 evaluators' ratings to make results more generalizable to a generic audience evaluating the speaker.

Results: The Competent Speaker Form with 22 total evaluations was only moderately internally consistent (Cronbach's alpha 0.509) and had poor inter-rater reliability (intra-class correlation, ICC, 0.540), despite 1.5 hours of evaluator training. In contrast, the 46 total evaluations of the CORD-EM form found the novel form to have exceptional internal reliability (Cronbach's alpha 0.923) with an acceptable inter-rater reliability (ICC 0.617). Validity evidence was strong for both forms.

Conclusion: The CORD-EM speaker evaluation form is the first form with strong reliability and validity evidence to our knowledge specifically designed to help conference planners. Future research will examine if its exceptionally short length improves audience response rates for speaker evaluations.

56 The Impact of an Emergency Department-Based Critical Care Unit on the Procedural Training Experience for Residents

Stull M, Hopson L, Bassin B, Heidemann L, Hartley S, Tochman S, Gunnerson K / University of Michigan Medical School, Ann Arbor, MI

Background: Clinical innovation can enhance operational metrics and patient outcomes; however, impacts on education are often not assessed. A new Emergency Critical Care Center (EC3) opened in a large University ED with a goal to provide seamless transition of care for critically ill patients from the ED to ICU.

Objectives: We aimed to quantify the changes in educational experience for EM and Internal Medicine (IM) trainees as a result so future iterations at other institutions could consider effects on the educational milieu.

Methods: A retrospective review of critical care procedures performed prior to and after the implementation of the EC3 at a single institution. Data was collected from procedure notes and billing records of the ED including EC3 and Medical ICU (MICU). Data from the first quarter of the year prior to the implementation was compared to the same quarter after the EC3 opened. In addition, EM and IM trainees were anonymously surveyed about their perceptions of the unit's effects on their training environment.

Results: Senior EM trainees (63% response rate) reported increased (50%) or unchanged (40%) comfort in caring for critically ill patients; However, IM trainees (79.1% response rate) felt it had a negative impact on their comfort level (64%). Comments revealed significant anxiety among both groups of trainees on the unit's potential impact on their learning environment. Procedural experiences are summarized in Table 1 with Intubations, Non-Invasive Positive Pressure Ventilation (NIPPV), and Central Venous Lines (CVL) performed in the ED showing substantial increases after opening of EC3. MICU procedures showed decreases in endotracheal intubations (-21.7%) and arterial lines (-15.9%) while CVLs remained stable.

Conclusion: Implementation of the EC3 results in significant trainee anxiety about its effect on learning despite overall favorable impressions from EM trainees. EM trainees are exposed to more invasive procedures; whereas IM trainees in the MICU may experience small but significant decreases in procedural opportunities. Institutions considering an ED-ICU should carefully plan for potential changes in the educational environment including procedural training for all trainees. Further work will delineate changes in case mix and management opportunities for learners.

Table. Critical care procedures for quarter 1 of 2014 (pre-EC3) and 2015 (post-EC3) for both ED and Medical ICU.

	2014 Q1 ED (pre)	2015 Q1 ED (post)	ED Change (%Change)	2014 Q1 ICU (Pre)	2015 Q1 ICU (Post)	ICU Change (%Change)
Intubation	71	101	30 (42.3%)	23	18	-5 (-21.7%)
NIPPV	31	47	16 (51.6%)	N/A	N/A	N/A
A-line	31	47	16 (51.6%)	69	58	-11 (-15.9%)
CVL	16	25	9 (56.3%)	50	51	1 (2.0%)
Paracentesis	57	51	-6 (-10.5%)	10	9	-1 (-10%)
Pericardiocentesis	1	0	-1 (-100%)	0	0	0 (0%)
Thoracentesis	7	9	2 (28.6%)	8	3	-5 (-62.5%)

57 Trends in NRMP Data from 2007-2014 for US Seniors Matching into Emergency Medicine

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Background: Since 1978, the NRMP has published data demonstrating characteristics of applicants that have matched into their preferred specialty in the NMRP main residency match. There is limited information about trends within this published data for those students matching into emergency medicine (EM).

Objectives: To investigate and describe trends in USMLE Step 1 and Step 2 scores (compared to the national means), number of contiguous programs ranked and AOA membership

among US seniors matching into EM.

Methods: This was a retrospective observational review of NRMP data published and between 2007 and 2014. Permission was obtained from the NRMP. The data was analyzed using ANOVA and Fischer's exact to determine statistical significance.

Results: There was no statistical difference in the average number of programs ranked by EM applicants among the years studied (p=0.93). Among time intervals, there was a difference in the number of EM applicants who were AOA (p=0.043). This statistical phenomenon was due to the drop in the number of AOA students in 2011. No statistical trend was identified over the time period studied. A net trend in overall Step 1 and Step 2 scores for EM applicants was observed. However, this did not outpace the national trend increase among all US seniors.

Conclusion: NRMP data from 2007-2014 demonstrates trends among EM applicants that are similar to national trends in other specialties for USMLE board scores, number of programs ranked and AOA membership. EM does not appear to have become more competitive relative to other specialties with regards to these metrics.

NRMP[1] Data for EM[2] Applicants from 2007-2014				
	2007	2009	2011	2014
AOA (%)	12.36%	10.93%	9.13%	12.04%
Mean number of programs ranked (SD)	7.8 (3.4)	8 (3.5)	8.5 (3.5)	9.2 (3.7)
Mean Step 1 score, EM (SD)	218.9 (18.8)	220.6 (18.2)	219.7 (18.1)	228.9 (17.3)
Mean Step 2 score, EM (SD)	225.1 (20.3)	227.6 (20.6)	232.3 (18.8)	241.4 (15.7)
Mean Step 1 score, all[3] (SD)	220.4 (20.3)	224.3 (19.6)	225.2 (20.6)	230 (18.8)
Mean Step 2 score, all (SD)	224.5 (22.3)	229.7 (21.8)	234.3 (20.4)	242 (16.6)

1 = National Residency Match Program
2 = Emergency Medicine
3 = all US seniors who matched in the NRMP main residency match

58 Use of Simulation to Assess Resident Performance of Medication Reconciliation and Disclosure of Error

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Background: According to the Institute for Healthcare Improvement, up to 50% of all medication errors in hospitals and 20% of adverse drug reactions (ADR) are a result of improper knowledge and recording of a patient's medications; medication reconciliation (Med Rec) is an important component of patient safety and should be part of a standard history. ACGME milestones include Med Rec in SBP3 (Technology) as a level 1 skill and disclosure of error in ICS1 (Patient centered communication) as a level 4 skill.

Objectives: Our objective was to determine how frequently our residents perform Med Rec using a simulated case. We also included an ADR to observe our residents disclosing an error. Our hypothesis was that junior residents would more frequently perform Med Rec but once the ADR was identified, senior residents would more readily disclose the error.

Methods: We developed a simulated case of a patient with an inferior STEMI. A triage note was developed using our EMR and provided to the residents at the time of the case. The note included an incomplete medication list. A nurse confederate and a bag of the "patient's" medications were in the simulation room. The "patient" was taking tadalfil for BPH. Nitroglycerin (NTG) was given by the nurse when ordered by the resident or "per protocol". After administration of NTG, the patient had persistent hypotension and worsening ST elevation (ADR to NTG due to tadalfil). If the resident did not recognize the ADR, the "cardiologist" asked about the patient's medications. A faculty member observing the encounter noted the level of training of the resident, performance of Med Rec and disclosure of error.

Results: 26 of 36 (72%) of residents participated in the simulation (PGY1 - 9, PGY2 - 9 , PGY3 - 8). 8 (31%) residents performed Med Rec (PGY1 - 3, 33%, p=1.0, PGY2 - 4, 44%, p=0.38, PGY3 - 1, 16.5%, p=.36). Once the ADR was recognized, 12 (46%) residents disclosed the error to the patient (PGY1- 4, 44%, p=1.0, PGY2 - 5, 56%, p=0.68, PGY3 - 3, 37.5%, p=0.68).

Conclusion: Overall, residents infrequently performed Med Rec in this simulated case and a minority disclosed the error to the patient. There was no difference in performance of Med Rec or disclosure of error by level of training despite the ACGME level of skill designations. Direct observation of these skills in a simulated setting allowed milestone based assessment of these skills without actual patient harm.

59 Using Gamification and Technology to Encourage Independent Study

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Background: Each year residency directors are faced with the challenge of finding new ways to motivate their residents to spend their free time studying independently. One potential solution is combining gamification with new technologies. Gamification uses game mechanics (leaderboards, head-to-head competition, tournaments, etc.) to incentivize residents to study and make the learning process more enjoyable. New technological innovations such as smart phones and tablet devices enhance access to and portability of educational tools. There has been little published in the medical literature on the utility of gamification in medical education.

Objectives: To use competition to encourage the use of an online question bank. We hypothesized that competition would lead to increased usage of the study program.

Methods: Emergency medicine residents at Barnes Jewish Hospital/Washington University School of Medicine are split into 6 "families" for educational exercises. Each "family" has 8 members, with 2 representatives from each class (PGY 1-4). Data were collected from September-December, 2014.

In this prospective observational trial, each resident was granted free access to the Rosh Review, an online study tool that consists of emergency medicine-specific questions. The program is accessible via computer or mobile device application. Calendar months were divided into alternating "Family Challenge" months and control months. During "Family Challenge" months, the number of correctly answered questions was tallied and weekly scoreboards were disseminated via email. The winning family was that which correctly answered the most questions at the end of the month. Only correctly answered questions were counted in order to control for honest effort when completing questions. There were no prizes.

Results: During the "Family Challenge" months of September and November a total of 6,692 correctly answered questions were completed compared to a total of 3,508 (p=0.009) during the control months of October and December. Table 1 compares the number of correctly answered questions organized by residency family and month.

Conclusion: Our study showed that gamification can be used to increase the use of an online study tool by emergency medicine residents. Showing competitors a scoreboard each week motivated them to complete more questions.

Table. Number of Correctly Answered Questions by Family.

	September*	October**	November*	December**
Sopranos	372	166	404	703
Huntables	325	103	415	536
Fockers	844	218	756	150
Corleones	424	184	396	193
Bluths	1125	481	820	363
Joneses	478	170	333	246
Total	3568	1320	3124	2188

*"Family Challenge" month

**Control month

60 What Predicts Resident Performance?: A Multi-Center Study Examining the Association Between Resident Performance, Rank List Position, and USMLE Scores

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Background: Each application cycle, emergency medicine (EM) residency programs devote an immense amount of faculty time predicting which applicants will be most successful in residency and rank them accordingly on their program's Rank Order List (ROL). However, few studies have investigated if ROL position, presence of a medical student rotation at their respective program prior to matching, or USMLE rank within a class are predictive of residency performance.

Objectives: To examine the correlation of initial rank position, USMLE scores and presence of a medical school rotation to a resident's final rank at the end of residency in order to guide future ranking processes.

Methods: All full-time EM faculty at Los Angeles County + University of Southern California, Harbor - UCLA (Harbor), Alameda County - Highland (Highland), and the University of California - Irvine (UCI) ranked the classes of 2013 and 2014 at time of graduation. From these anonymous surveys, a graduation rank list was created. This graduation rank list was then compared to each class's USMLE Step 1 rank within a class, rank order list, and presence of a medical student rotation using Spearman's rho.

Results: A total of 93 residents, spanning 2 graduating classes, at 4 EM residency programs in California were evaluated. Residents' initial ROL was not correlated with final graduation rank order (Rho=0.14, p=0.19). This was true for the pooled sample as well as individual programs. Interestingly, among the subgroup of individuals who had rotated as a medical student at their respective programs, ROL did significantly correlate with final ranking (Rho=0.31, p=0.03). We did not observe a significant correlation between USMLE step one scores and graduation rank (Rho=0.15, p=0.14).

Conclusion: This multi-center study showed that USMLE Step 1 score rank within a class and position on initial rank order list did not predict resident performance at time of graduation. However, ROL was predictive of future residency success in the subgroup of residents who had completed a sub-internship at their respective programs. These findings should guide the future selection and ranking processes of emergency medicine residencies.

61 When do Sub-Interns Prefer to Interview?

Hoffman D, Clauson A, Shoenberger J, Tabatabai R, Taira T, Osterman J, Wagner J/Los Angeles County + University of Southern California Medical Center, Los Angeles, CA

Background: Traditionally, all 4th year sub-interns rotating in Emergency Medicine at LAC+USC were invited back for their residency interview during interview season (Nov-Jan). This required students to travel back to Los Angeles at a later date to interview and filled a large number

of our program's interview spots.

Objectives: The aim of this study was to determine if interviewing sub-interns during their rotation would be favored positively. We hypothesized that students would prefer this option, as it would save them time and money. It would also benefit our program as we could cut down the number of interviews offered during interview season, decreasing faculty interview fatigue.

Methods: Design: Using an online survey system, students were anonymously asked 4 multiple-choice questions following the match. Setting: Los Angeles County + University of Southern California. Participants: All visiting 4th year medical students who rotated at LAC+USC as EM sub-interns and matched in EM during the 2014-2015 application cycle. Observations: Answers were compiled and compared between one another.

Results: A total of 33 students completed the survey. Q1: Advantages to interviewing at the end of the rotation (100% save money/travel costs, 73% less stressful interview, 64% allows better familiarity with program, 48% allows applicant to leave better impression, 21% allows for earlier decision making, 0% no advantage). Q2: Interviewing at end of the rotation was (18% advantageous, 15% disadvantageous, 67% neither). Q3: Disadvantages to interviewing at end of rotation (51% incomplete application at time of interview, 48% program may forget about applicant at rank time, 30% does not allow enough time to prepare/practice for interview, 24% none, 18% applicant may forget specific aspects of program). Q4: If I could do it again, I would prefer my interview at (85% the end of rotation, 15% a later date).

Conclusion: EM bound 4th year medical students prefer interviewing during their sub-internship as it saves money and time, while providing a less stressful interview experience. Anecdotally, this intervention also significantly cut down on faculty fatigue as roughly 50-60 interview spots were eliminated from our interview season (Nov - Jan) while still interviewing the same number of applicants.

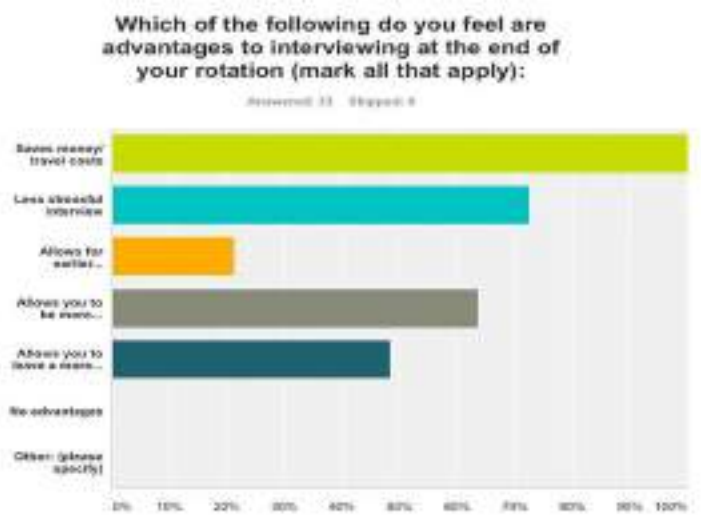


Figure 1.

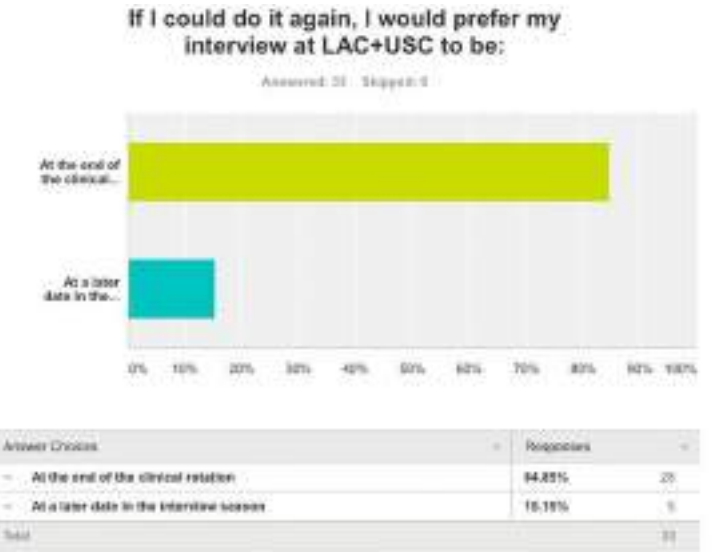


Figure 2.

62 Women Leaders in Academic Medicine: A Chair's Perspective

Jaglan S /New York University School of Medicine, New York, NY

Background: Since 1975, the medical field has seen a six-fold increase in female physicians. According to the AAMC in 2011-2012, women represented 37% of full-time medical school faculty, 43% of assistant professors, 20% of full professors, 14% of department chairs, and 12% of medical school deans. Despite this great increase, there is a "trickling off" effect of women in high-level leadership positions, especially as full professors, department chairs, and medical school deans.

Objectives: Assess the leadership culture in a prominent academic medical center and to gain a greater understanding of the perspectives that department chairs have on women in academic leadership positions.

Methods: Our study was conducted between May 2013-August 2013. We interviewed 18 of 25 clinical department chairs within our institution, a 72% response rate. Each interview was 20-40 minutes with standardized questions, including open-ended questions on their views on leadership characteristics, the barriers women face, why they face them, and possible solutions. All interviews were recorded, transcribed and remained confidential. The department chairs were only excluded if they were unable to schedule an interview during that time.

Results: The most cited barriers to women in leadership positions were Experience, Work-Life Balance, Self-Perception, and Specialty. Of our chairs, 89% discussed Work-Life Balance as the major barrier to women attaining leadership positions. In accordance, 39% felt that child-bearing years, or "time lag", is discriminatory against women. 28% felt that women tend to lack self-promotion/negotiation skills (Self-perception), which

supports the need to empower young women and to develop an interest in leadership. Additionally, 60% of women specialize in internal medicine, pediatrics, family medicine, obstetrics-gynecology, psychiatry, and anesthesiology, leading to lack of mentorship in other specialties. This lack of mentorship was voiced most strongly by the female department chairs. Of the interviews conducted, 100% believed that men and women are equally capable of being effective leaders in medicine and 41% reported that gender entered their thought process when hiring faculty or residents.

Conclusion: Our study emphasizes the need for institutionally-based programs to promote women leaders in medicine, to support those already in leadership positions and to foster the development of future female leaders. By instating a program dedicated to women in medicine, institutions are promoting gender diversity, which has been positively linked to financial performance. These programs should focus on re-entry for those who take leave, mentorship, and addressing specific barriers women may face. These are key components to promote the success and progression of women in medical leadership positions and to improve institutional level leadership as a whole.

Figure. Barriers to Women in Leadership.

Innovation Abstracts

1 #WhatILoveaboutPennEM: A Unique Social Media Based Residency Marketing Strategy

Love J, Mamtani M, Conlon L, DeRoos F, Scott K/ University of Pennsylvania Department of Emergency Medicine, Philadelphia, PA

Background: The use of social media in emergency medicine (EM) resident medical education has been transformative. Twitter, Facebook, and blogs have been used to enhance education by providing real-time updates on practice evidence, allowing for debate and discussion on best care practices, and creating a rich database of learning resources from renowned EM experts. While social media has been instrumental in graduate medical education, little is known regarding its role in residency recruitment. Residency directors largely rely on interviews, interview day events and program websites to attract residency candidates. However, we hypothesize that residency programs might be able to enhance recruitment using social media to attract residency candidates best suited for their programs.

Educational Objectives: The goal of our innovation is to assess if social media can be used to enhance residency recruitment.

Curricular Design: Residency Twitter (@UPennEM) and Facebook accounts were the primary social media methods utilized to distribute residency information. Tweets were released daily for one month prior to the start of residency interviews, and then weekly during interview season. Tweets were also copied and posted onto the Facebook account. Tweets consisted of up to 140 character messages; some Tweets included photos. Topics included information about program resources, residents, and faculty, direct quotes from current residents,, and questions to current faculty and residency graduates. A Twitter hashtag, "#whatIloveaboutPennEM", was created to label Tweets as information for interview candidates. Residency candidates were emailed about the Twitter and Facebook accounts prior to their interview day.

Impact/Effectiveness: With the number of EM residency candidates increasing and the limited in-person exposure between programs and candidates, social media provides a means to connect with residency applicants throughout interview season. By using residency Twitter accounts, Facebook accounts, or other social media, programs can highlight and provide further insight into unique aspects of their curriculum, current residents, faculty, and graduates. We are currently collecting data on the interactions and potential influence of our Tweets and posts. However, we believe this marketing strategy will further inform applicants and enhance recruitment of residents. A future study will seek to evaluate the influence of programs' use of social media on residency applicants' decision-making process during interview season.

2 360 Degree Feedback: A Novel Format for a Program Evaluation Committee in an Academic Emergency Medicine Residency Program

Caretta-Weyer H, Wilbanks M, Snow B, Kraut A, Barclay-Buchanan C, Westergaard M/University of Wisconsin, Madison, WI

Background: The ACGME mandates that residency programs maintain a program evaluation committee (PEC) which evaluates the educational activities of the program annually from the vantage point of resident and faculty stakeholders. While the traditional PEC structure does not include input from administrative, nursing, or ancillary staff, these individuals often have useful feedback. We sought to enrich our program evaluation process by eliciting 360 degree reviews of educational experiences from emergency medicine residents, off-service residents and faculty, nursing staff, administrators, and other relevant stakeholders in monthly, rotation-specific reviews. To our knowledge, this represents a novel approach to the PEC and provides the opportunity to explore untapped resources for improving educational experiences.

Educational Objectives:

1. Initiate comprehensive, systematic evaluation of program educational experiences in line with function of PEC
2. Collect feedback from key stakeholders, including non-traditional sources, in order to identify actionable, high-yield recommendations for improvement
3. Establish longitudinal tracking of key recommendations to ensure implementation of meaningful change

Curricular Design: We implemented a comprehensive multi-source review system in order to expand and accelerate our program evaluation process. Each month, five reviewers (chief resident, resident, program leader, core faculty, administrator) review a documentation packet and conduct interviews of key stakeholders (including non-traditional sources) using reviewer-specific interview tools. The findings are presented for residency-wide discussion at monthly meetings and then integrated into a final document highlighting strengths, areas of concern, and proposed improvements. This document is shared with the rotation director for feedback before negotiating final recommendations, which are tracked for successful implementation on a quarterly basis by the PEC.

Impact/Effectiveness: The 360 degree review process uncovers significant opportunities for improvement that are missed by traditional reviews. The negotiation process and formalized recommendations improve accountability on the part of rotation directors. Lastly, residents demonstrate improved understanding and engagement in program evaluation and improvement processes.

3 A Low Cost Cesarean-Section Trainer on a Live Model to Teach the Procedure of Resuscitative Hysterotomy

Figure.

Bryant R, Wagner J, Sampson C/University of Utah, Salt Lake City, UT; Washington University, St Louis, MO; University of Missouri-Columbia, Columbia, MO

Background: Resuscitative hysterotomy is a low frequency, high-risk procedure. Procedures that occur rarely in clinical practice present a unique learning challenge. Most can be taught in a cadaver lab, or with simulators that make serial practice cost prohibitive. Providing residents with cost effective, replaceable trainers represents a significant financial challenge for residency programs. A once per career procedure is more likely to be successful in practice if the proceduralist has performed the procedure in a simulated fashion during training.

Educational Objectives: We provide a description of the use of a novel teaching method for the procedure of resuscitative hysterotomy on a live volunteer using a model previously described.

Curricular Design: A previously described resuscitative hysterotomy model can be assembled using items from non-medical stores. This model has traditionally been used on manikins.

During a didactic session on critical illness in pregnancy we described the procedure of resuscitative hysterotomy.

The model was fitted to a resident (Figure 1), and a surprise cardiac arrest was staged. A resuscitative hysterotomy was then performed on the resident fitted with the mock pregnancy model to demonstrate the procedure.

Afterward, 3 resuscitative hysterotomy models were made available to residents to practice the procedure. This approach allowed staged repetition of the procedure with a description, then demonstration, and then an opportunity for hands on practice.

Impact/Effectiveness: Our residency program uses E-value to provide feedback to presenters. Feedback from the teaching session was universally favorable (Table), with attendees commenting on the quality and realism of the resuscitative hysterotomy simulation, and the improved educational benefit from both seeing and doing the procedure, rather than just having it described. The benefit of using this model on a live volunteer is the extra degree of realism that it brings to the procedure. This novel approach using a cost effective model on a realistic patient in a clinical scenario of resuscitative hysterotomy has the potential to improve performance when the opportunity arises in clinical practice.

Table. Results from survey to evaluate performance of presenter at resident conference.

Question	n/a	Needs improvement (1)	Good (2)	Excellent (3)	Outstanding (4)	Total	Average (1-4)
The content presented was relevant to the practice of emergency medicine	1	0	0	3	16	19	3.84
The speaker presented material at an appropriate level for resident training	1	0	0	3	16	19	3.84

4 A Novel Apprenticeship Model Providing Progressive Educational Responsibility and Individual Development to Emergency Medicine Residents

Moll J, Troendle M, Moffett P/Virginia Commonwealth University, Richmonad, VA

Background: In many clinical environments, patient care demands limit the opportunity to provide direct mentorship and individual instruction to new interns, or progressive teaching responsible to more senior residents. We developed an apprenticeship rotation to accomplish both early in the academic year.

Educational Objectives: The objective of the curriculum was to use an apprenticeship model to provide individual personalized educational guidance and development to new emergency medicine interns from a senior resident. By doing so, the senior resident will learn adult educational theory, and develop skills in bedside teaching and assessment of a learner.

Curricular Design: EM1 residents in a PGY1-3 emergency medicine training program were paired 1:1 with a final year EM resident over a two-week period. The rotation took place at a moderate acuity 25,000 annual census Veterans Administration emergency department. Senior residents had no individual patient care responsibility, functioning solely in the preceptor role. Seniors received education on adult learning theory using self directed materials, then subsequently developed bedside teaching topics, performed structured observation assessments, and completed specific mid and end rotation evaluations.

Impact/Effectiveness: Over the initial 6 months, 100% of seniors strongly agreed the rotation was a valuable addition to their education, emphasized their development as an educator, and felt the rotation should continue in future years. Eighty percent of interns felt it was a valuable addition to their education, with 20% neutral. All felt the rotation emphasized and was valuable to their development as an emergency medicine intern. The majority (80%) felt the rotation should continue, with 20% neutral. The only negative cited was parking availability. Our early experience has shown enthusiasm and perceived value from final year senior residents for progressive responsibility not available to them at the primary clinical site. New interns, while slightly less enthusiastic, all found development value.

5 A Novel Approach to Medical Student EMS Education

Lubbers W, Adkins B/University of Kentucky, Lexington, KY

Background: Emergency medical services (EMS) and prehospital medicine is a critical component of most any healthcare system in the US and throughout the developed world, yet medical students rarely, if at all, receive formal or informal training on even the basics of prehospital care. A formal introduction to EMS medicine would benefit both the physician and the practice of EMS medicine.

Educational Objectives: Provide an introductory educational experience for 3rd year MD students on EMS systems, prehospital care, mass casualty triage and management, and prehospital transport considerations.

Curricular Design: Our EMS division developed an EMS workshop for all third year medical students on their EM rotation. The program begins with a 15-20 minute didactic session to discuss history of EMS, provider capability, system components and design, and the concepts of on-line/ off-line medical direction. Students are then given instructions on basic mass casualty triage and are "dispatched" to an outdoor scene to a simulated bus accident involving 18 "paper patients" that they must locate, triage, and treat (Figure). As the teams progress through the exercise, individual patients generate "breakout skill stations" (Table). The final task is for students to determine a transport mechanism (air vs ground), priority, and destination in a simulated trauma system.

Impact/Effectiveness: Physicians in most any specialty may be called on to serve as medical directors, educators or advisors, and will at some point most certainly call on EMS for care of an ill patient, yet if their chosen specialty is not EM, the

likelihood that they will have had any formal education in EMS is very low. While a two hour workshop cannot cover the length and breadth of EMS, our curriculum has been able to provide an introductory education on the topics most applicable across specialties (ie transport decisions, prehospital care/ provider capabilities, mass casualty medicine). We've provided this course for more than 180 3rd year students, and have been able to package it for use in multiple settings (ie the university's partner institutions, indoors in case of inclement weather). It would be easily translatable to other institutions and settings. We believe universal education for medical students on the basics of prehospital care will create better physicians and strengthen EMS medicine.

Figure.

Table.

EMS Workup Objectives

		DIDACTIC	SCENARIO	WRAP-OUT SKILL	WRAP-OUT DISCUSSION
EMS Systems					
	History	•			
	Patient Access	•			•
	Provider scope	•			•
	Medical direction	•			
Mass Casualty					
	Scene safety		•		•
	Triage scheme		•		
	Triage schemes		•	•	•
	Referral vs Treatment		•		
	Multiple victim management		•	•	•
Prehospital Care					
	Treatment Priority		•	•	•
	Hemorrhage control			•	•
	Increased ICP			•	•
	Airway mgmt			•	•
	Immobilization/ Splint			•	•
	Contamination/ Tox				•
	Injectable control				•
	Attend MD				•
Transport					
	Transport priorities		•		•
	Destination choice	•		•	•
	Systems of care	•			•
	Ground Ambulance Considerations	•			•
	Aeromedical Considerations				•
	Flight crew characteristics				•
	Flight physiology				•
	Alternative Transport				•

6 A Novel Approach to Self-Directed Learning and the Flipped Classroom Method for Residency Didactic Curriculum

King A, McGrath J, Greenberger S, Panchal A, Thompson L, Khandelwal S / Ohio State University, Columbus, OH

Background: The flipped classroom learning approach is recognized as the preferred curricular model in medical education. We recently innovated our residency didactic curriculum to create a novel flipped classroom design with small group discussions rather than traditional lectures. Education faculty create small group modules based on the core content of emergency medicine with objectives and recommended reading material.

Educational Objectives: Create and execute a novel flipped classroom approach to teach learners the core content of emergency medicine utilizing self-directed learning and small group discussions.

Curricular Design: Prior to weekly conference, learners complete self-directed learning on the core content topics to be covered using faculty provided or independently identified resources. Residents are asked to submit a question that developed during their self-directed learning in addition to an ABEM style question which is used to develop a quiz to assess participation. Weekly conference begins with a morbidity/mortality conference utilizing a cognitive autopsy approach or a resident led "rapid-fire" case review. Learners then divide into their assigned small groups and rotate among three different small group sessions. Two of the sessions discuss topics within the core content of emergency medicine focusing on clinical controversies and higher level thinking. The third session is composed of either a procedure lab/simulation or evidence based medicine discussion. Procedure labs allow faculty to teach and evaluate residents on procedure based milestones, while simulation sessions evaluate milestones identified as difficult to routinely assess in the clinical environment. Following conference, residents complete a quiz composed of their submitted questions as well as an independent learning plan which consists of questions that remain following the discussion with a plan to answer them.

Impact/Effectiveness: The institution of this novel curriculum was not without challenges as both faculty and residents were initially skeptical of the concept and concerned about the increased workload. We were able to overcome the challenges and skepticism to execute a successful novel curricular model. Both resident learners and faculty members have provided an overwhelming amount of positive feedback. Minor adjustments will continue in order to perfect our method.

Figure.

7 A Novel Flipped-Classroom Curriculum for Intern Education

Shappell E, Ahn J/University of Chicago, Chicago, IL

Background: Traditional conference education emphasizes lecture-based instruction. However, evidence supports non-traditional classroom teaching for this generation of millennial learners. Also, the conference setting is used to achieve a common foundation of knowledge, but scheduling demands can limit conference attendance. We have addressed both of these challenges by developing a flipped-classroom curriculum with stand-alone asynchronous content.

Educational Objectives: We aim to achieve a common foundation of knowledge, skills and attitudes in interns using a flipped-classroom model. We focus on 25 topics common to all emergency medicine interns. We strive to produce interns uniformly comfortable with the management of each covered condition.

Curricular Design: A group of educators identified a need to provide core content for interns, the breadth of which required a longitudinal year-long design. A needs assessment across two separate EM programs confirmed the need for an intern curriculum (87% stated this would improve education) and learner interest in this format (84% favored dedicated conference time, 73% favored asynchronous resources). The 25 highest-rated topics by learners were chosen to be covered. We created a website to host asynchronous resources (EMFundamentals.blogspot.com). Each content page includes goals and objectives as well as references (e.g. journal articles, podcasts, institutional guidelines). For interns attending conference, faculty-led small-group sessions reinforced key concepts. For interns unable to attend, this web-based content delivery ensured a baseline knowledge. Current assessment methods include a post-curriculum attitudinal survey and pre/post knowledge quiz.

Impact/Effectiveness: This is our first year with full deployment of the curriculum; feedback from our pilot year is promising. 75% preferred the flipped-classroom model (versus traditional lecture) and 100% of users reported a positive impact from the asynchronous resources. The knowledge test for Kirkpatrick level 2 data has begun this year and plans to collect Kirkpatrick level 3 data via simulation are in development.

8 A Novel Game for Introducing Important Aspects of Effective Patient Consenting

Goodman G, Jones J/Alamance Regional Medical Center, Chapel Hill, NC; University of North Carolina, Chapel Hill, NC

Background: Informed consent is one of the most important tenets of modern medicine and has significant legal and ethical implications. Unfortunately during medical education there is little instruction on what makes up informed consent. Often the senior level resident teaches it, however topics like prior knowledge, therapeutic privilege, alternative treatments and expected outcomes without intervention are rarely discussed formally. This leaves the process of informed consent nebulous to the detriment of the patient and the provider.

Educational Objectives: To design a game that is both interactive and informative that teaches and instructs learners about the important aspects of informed consent and the specific odds that certain common ED procedures carry.

Curricular Design: EM residents are divided into groups of 4-5 residents. They are then given 5 scenarios which contain common ED procedures. Each scenario has two rounds. In the first each team lists what they believe are the risks, benefits, alternative treatments and expected outcomes without intervention. A discussion follows where teams debate which answers were correct. During this time the moderator helps facilitate a discussion based on what aspects of informed consent were covered and what that scenario was meant to highlight. Each correct answer is worth one point. The second round then requires the groups to guess the odds of common risks for the five scenarios' procedures. The closest team gets three points. At the end of the game the team with the highest total wins.

Impact/Effectiveness: This game is designed to fill the gap in education regarding informed consent. By being interactive and engaging it is intended to stimulate thought about what important aspects of informed consent. The discussions simulate what might happen in a courtroom and allows the moderator to delve deeper into topics. Finally this game's format can easily be used and adapted for other specialties.

9 A Novel Method to Monitor Participation for Individual Interactive Instruction

Khadpe J, Silverberg M/SUNY Downstate Medical Center, Brooklyn, NY

Background: As described in the Accreditation Council for Graduate Medical Education (ACGME) Frequently Asked Questions for Emergency Medicine (EM), one of the required components for Individual Interactive Instruction (III) is the monitoring of resident participation by the Program Director (PD). This can be a prohibitive barrier in the implementation of III in a residency program's curriculum, creating a need to track resident participation in these activities that does not significantly increase resource utilization.

Educational Objectives: To monitor resident participation in III activities through the use of electronic procedure logging software.

Curricular Design: Residents in the SUNY Downstate / Kings County Hospital EM Residency Program may utilize III for up to twenty percent of their required participation in planned didactic activities each academic year. We added "1 Hour Asynchronous Learning" as a fictitious procedure name for residents to choose in the electronic procedure logging feature of our residency management software suite. The resident may then complete an entry form for each hour of III, listing the date, supervising faculty, and specific activity completed. (Image 1) The supervising faculty, similar to clinical procedures that are logged, must then confirm each entry with an electronic signature. In this way, all III hours can easily be electronically monitored and verified by the PD in a very efficient manner that satisfies the requirement set forth by the ACGME.

Impact/Effectiveness: During the 2014-2015 academic year, we monitored 2,235 hours of III by 73 residents using the electronic procedure logging method. Because of this, our program has been able to expand the approved activities available to our residents without significantly increasing the resources required to monitor their participation by the PD. By using preexisting features found in all commercially available residency management software suites to monitor III participation, a large barrier to the implementation of III programs is eliminated. We believe the broad adoption of this innovation would lead to a significant increase in the number of residencies able to integrate III into their didactic curricula.

Figure.

10 A Novel Point-Based Criterion for Mandatory Resident Scholarly Activities

Eastin C, Eastin T, Wilbur L, Seupaul R/University of Arkansas for Medical Sciences, Little Rock, AR

Background: Completion of the resident scholarly activity requirement lacks standardization. This is complicated by the perceived vagueness of what qualifies as scholarly, resulting in projects that have little impact on developing residents' life-long learning skills.

Educational Objectives: Create an objective and flexible resident scholarly project guideline that clarifies and expands scholarly options beyond the traditional "research project". These point-based guidelines intend to provide synergy with residents' career path and facilitate valuable educational experiences.

Curricular Design: A literature search was performed to locate published guidelines and descriptive analyses regarding resident scholarly activity. Additionally, the Program Requirements for Emergency Medicine's (EM) section on scholarly activity was reviewed. This information was synthesized to create the Scholarly Project Guideline, a document that was subsequently modified using a Delphi model incorporating resident and faculty feedback. The guideline uses a point-based system for a menu of activities with a recommended timeline for completion. Point values are determined by the nature of the project. Residents must earn 10 points, in addition to completing specific administrative tasks, to meet the scholarly activity requirement for graduation.

Impact/Effectiveness: This simple objective scholarly activity guideline allows residents to choose projects that they are motivated to complete while making it easier for program leadership to determine the completion of this important requirement. This guideline may also be applicable to specialties other than EM. Future investigation will track the quality of scholarship produced and their impact on life long learning activities.

Table. Scholarly Point System.*

Type of Scholarly Activity	Points
IRB-approved project completed with manuscript submitted to a peer-reviewed journal	≥10
Submission of a manuscript describing a case series, systematic review, or meta-analysis	≥10
Presentation of a poster or oral presentation at a regional, national, or international conference	5
Publication of a book chapter or section	10
Quality-improvement project completed and results shared with peers	7
Initiation of IRB-approved or QI project but project still ongoing at time of graduation	8-10
Submission of a grant for intramural or extramural funding (with IRB approval)	10
Creation and maintenance of an online teaching tool	5
Publication of a letter to the editor in a peer-reviewed medical journal	3-5
Creation of simulation case for simulation curriculum (not published vs published)	3 - 10
Submission to peer-reviewed journal or national conference of a series of interesting cases (ie, visual diagnosis cases or photo competition)	3.5
Publications for the lay public, such as newspaper articles, on medical topics	3
Participation on a national committee	5
Critically appraised topic write-up and submission to journal	5

*This point system was created and published by the Department of Family Medicine and Community Medicine at Eisenhower Army Medical Center[4]. Types of activities and points eligible were edited and tailored to the needs of the UAMS Department of Emergency Medicine. If projects are submitted that do not fit into one of these categories, the Scholarly Activity Committee will score them individually.

11 A Real Life Cricothyrotomy Trainer

Lubbers W/University of Kentucky, Lexington, KY

Background: Emergency surgical cricothyrotomy (ESC) is one of the most critical but least commonly performed procedures in emergency medicine, making simulation an important component in achieving and maintaining competence. Standard ESC models emphasize the external landmarks and basic procedural motions, but fail to account for the need for tactile-only guidance or the challenging environment of the procedure. A program teaching "real-life" ESC would benefit EM residents in learning this high stress/low frequency procedure.

Educational Objectives: Develop an ESC training program to train residents in ESC that accurately mimics the challenges to ESC in a patient (difficult visualization, blind technique, high stress environment).

Curricular Design: We developed an ESC training program using a reversibly modified airway mannequin in which standard ETI was not possible; the neck portion was also modified using parts available from a local hardware store and from the ED (Fig 1), giving not only the appropriate external tactile landmarks, but also requiring the learner to perform dissection through 2.5 cm of soft tissue and blind incision of the cricothyroid membrane. Additionally, visualization during dissection is limited by the instructor's ability to make the model actively bleed after skin incision. ESC is taught in this scenario via the modified scalpel-forecep-scalpel-bougie (Fig 2) technique to prevent sharps injury. We also designed a "stand-alone" model to be used without an airway mannequin (Fig 2D). Use of a simulated monitor adds a realistic but controllable impetus to act or attempt to implement rescue techniques.

Impact/Effectiveness: ESC is a critical skill for emergency providers, but the first time an EM provider is likely to perform the skill will be in a critical setting on a patient that looks and behaves very little like the model he or she has practiced on; our novel curriculum and model recreate the conditions under which ESC must commonly be performed, ie a "real-world cric." Using our models, we were able to train our classes of junior and senior level residents in ESC for a cost of $25.22. For a procedure like ESC, which junior physicians may have at best one opportunity to practice during training, realistic simulation of the actual procedure is likely to be the learner's only chance to not only learn the procedural steps, but how to perform those steps in the clinical setting.

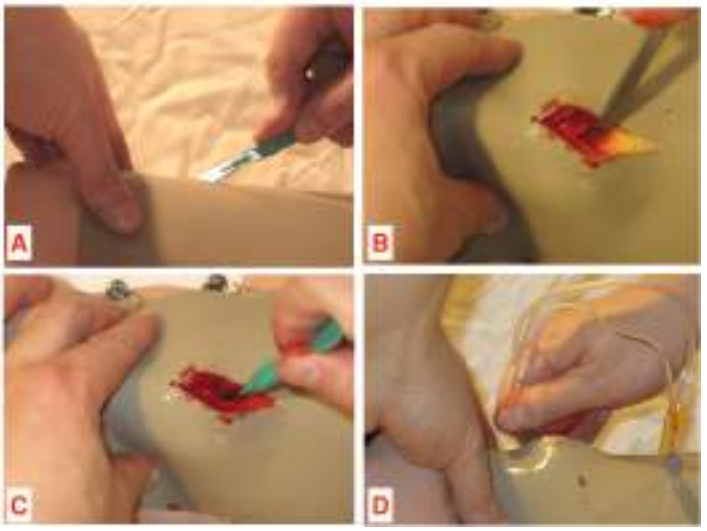


Figure 1.

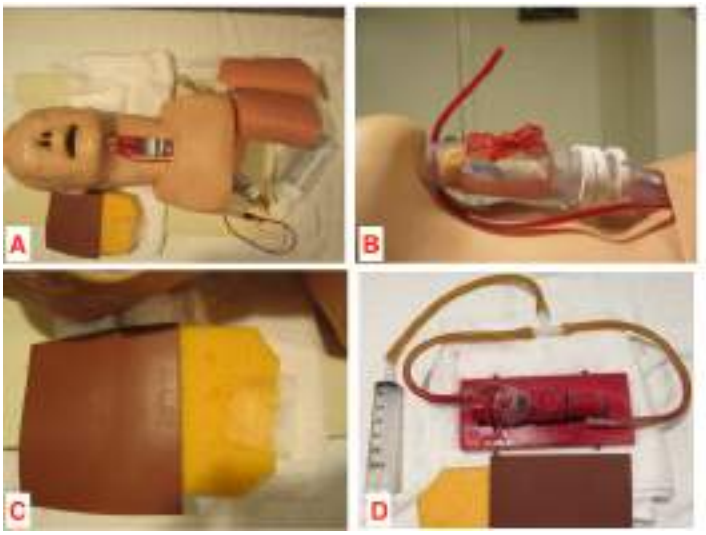


Figure 2.

12 A Web-based Patient Follow Up Log with Faculty Feedback Loop

Smith I, Van Meter M/UT Houston Department of Emergency Medicine, Houston, TX; UT Houston Department of Emergency Medicine, Houston, TX

Background: The Residency Review Committee for Emergency Medicine (RRC-EM) requires that EM residencies must develop a system that provides and documents efforts to teach residents the importance of patient follow-up. This should involve a representative sample of patients who are discharged from the emergency department." In addition, the Emergency Medicine Milestone Project requires residents to perform regular patient follow up to achieve a "Level 2" for the "Practice-based Performance Improvement" milestone.

Educational Objectives: To date, there is limited data on

the utility and educational value of patient follow-up logs. In order to address the RRC-EM requirement for patient follow-up logs we have created a web-based follow up system (WBFUS) with a faculty feedback loop to enhance educational value.

Curricular Design: The patient follow up is designed around a clinical question for a patient encounter. The resident performs a brief literature review to answer this question, follows up on inpatient reports, consults or calls the discharged patient. Once the question is answered it is entered into a WBFUS. This is encrypted for Patient Health Information and allows for entry of a number of descriptors (Image 1). Also included is a brief description of the clinical course, entry of the clinical question, and the reflection on the case as well as resources used. The unique feature for our WBFUS is that the resident can assign their faculty advisor as well as the faculty involved in the patient's care to be prompted via email for feedback on the entered case. This is all organized in a concise one-page web interface allowing for a fast, efficient provider input. The WBFUS has convenient search options including, but not limited to, listing those lacking cases and/or feedback.

Impact/Effectiveness: The WBFUS incorporates the tenants of deliberate practice into a life-long learning component for our curriculum. During the first year of its implementation in 2014 we had a total of 150 patient follow-up logs created. Out of the 150 created, 107 residents (71%) reported that it will impact their practice. In addition there were 147 faculty feedback comments to increase the educational value. Using this model we have created an effective and satisfactory method of self-learning with faculty feedback.

13 ABCs of Team Leadership: Using Shift Card Data to Guide Future Education

Hegarty C, Nelson J, Barringer K, Binstadt E, Wong M/ Regions Hospital, St. Paul, MN

Background: Based on the need for Emergency Medicine (EM) Residents to gain expertise in leading medical and trauma code teams, we created the ABCs of Team Leadership curriculum in 2012. In addition to teaching our residents the team leadership curriculum, we have an optional end-of-shift card filled out by residents and faculty to facilitate focused feedback on team leadership performance (image 1).

Educational Objectives: The Residency Review Committee for EM states that 'each resident must have sufficient opportunities to direct major resuscitations of all types on all age groups'. Our team leadership curriculum was created to prepare residents to direct and lead those resuscitations.

Curricular Design: The ABCs of Team Leadership curriculum was created in 2012 based on a literature review of team leadership in medicine, aviation, business and the military. We applied common themes learned from the literature review to our own experience to develop this EM-specific team leadership curriculum. Residents complete one session per year with a simulated case followed by a debriefing and review of the ABCs of Team Leadership. An end-of-shift feedback card was created to enable the residents to do a self-evaluation of their team leadership performance, as well as to receive faculty comments. In 2015 we modified the faculty section of the feedback card to incorporate some milestone questions to the card.

Impact/Effectiveness: To guide future education in this topic, we performed an educational quality review of the resident card data in November 2015. Based solely on the resident self-evaluation section of the card, we looked for any specific questions in which they did not answer 'yes' as consistently to see if we need to modify our yearly educational team leadership session. The data for the classes of 2014, 2015 and 2016 is presented in Table 1. Based on the data, it would appear that 'Did you use direct, clear, closed-loop communication?', 'Did you periodically review the plan with the entire team?' and 'Did you do a quick debriefing of the case with your staff, team, or key personnel?' may need to be emphasized or taught differently in our yearly team leadership session. Other EM residencies that teach team leadership skills may find this data helpful to guide their curriculum as well.

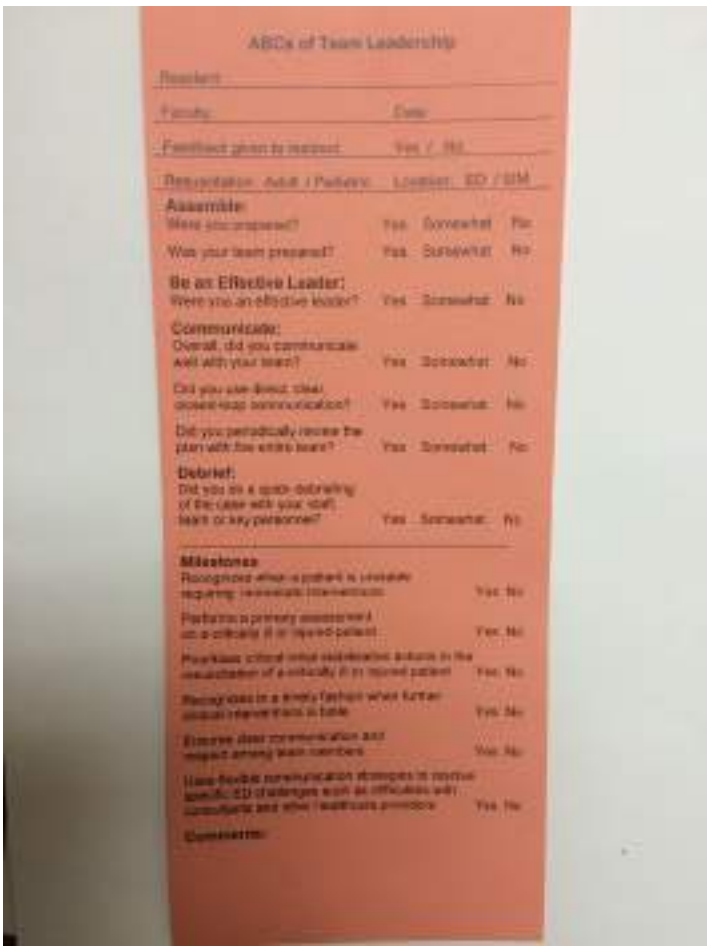


Figure.

Table. Data from the classes of 2014, 2015, and 2016.

Total Cards: 92

	Yes	Somewhat	No	Not Answered
Were you prepared?	77 86%	10 11%	3 3%	2
Was your team prepared?	75 85%	11 13%	2 2%	4
Were you an effective leader?	66 80%	17 20%	0 0%	9
Overall, did you communicate well with your team?	69 79%	18 21%	0 0%	5
Did you use direct, clear, closed-loop communication?	52 60%	34 39%	1 1%	5
Did you periodically review the plan with the entire team?	61 72%	24 28%	0 0%	7
Did you do a quick debriefing of the case with your staff, team or key personnel?	39 48%	13 16%	29 36%	11

14 Adapting Gel-Wax into a Low Cost Ultrasound Guided Pericardiocentesis Model

Daly R, Planas J, Edens M/University of Florida-Shands Hospital, Gainesville, FL; LSUHSC-Shreveport, Shreveport, LA; LSUHSC-Shreveport, Shreveport, LA

Background: Cardiac tamponade is a life-threatening emergency for which pericardiocentesis may be required. Real-time bedside ultrasound has obviated the need for routine blind procedures in cardiac arrest and the number of pericardiocenteses being performed has declined. Despite this fact, pericardiocentesis remains an essential skill in emergency medicine.

While commercially available training models exist, cost and durability limit their usefulness.

Educational Objectives: We sought to create a pericardiocentesis model that is realistic, simple to build, reusable and cost efficient.

Curricular Design: The model was constructed utilizing a saline filled Ping-Pong ball (simulating the left ventricle) and a 250cc saline IV bag (simulating the effusion) encased in an artificial rib cage, held in place by gel-wax with flour mixed in (Picture 1). The inner saline bag was connected to a 1L saline IV bag outside of the main assembly to act as a fluid reservoir for repeat uses. The model was mounted loosely on a piece of plywood and covered with latex exercise bands to simulate skin. The cost of the materials was <$200 (Table 1). The construction time was about 4 hours, but then an additional day was given for gel-wax to cool and set before use.

The model was introduced to Emergency Medicine residents and students during a procedure simulation lab and compared to another DIY model model previously described by dell'Orto. The learners performed ultrasound guided pericardiocentesis using both models and were asked to complete a survey regarding the realism of the two models.

Impact/Effectiveness: Learners felt our model was more realistic than the previously described model. On a scale of 1-9 with 9 being very realistic, the previous model was rated a 4.5. Our model was rated a 7.8. Additionally, 100% of students were successful at performing the procedure using our model.

In simulation, our model provided both palpable and ultrasound landmarks and held up to several months of repeated uses. It was much less expensive than commercial models while being more realistic in simulation than other described DIY models. This model can be replicated in training programs to teach the necessary skill of pericardiocentesis.

Figure.

Table. List of Materials.

Material	Store	Cost (USD)
Gel-Wax	Any craft supply store	$53
Rib Cage	Skeletons and More LLC. (through amazon.com)	$62.95 + $12.95 Shipping
Plastic storage bin	Target	$5
250cc fluid bag		$4.40
1000cc fluid bag		$8.29
Secondary IV tubing		$4.40
3 way stopcock		$6.99
Exercise band 6 in x 6 ft	Any sporting goods store	$17.99
Plywood	Any lumber store	$5
Ping pong balls x 2	Any sporting goods store	$3.99

15 Advanced Ultrasound Workshops for Emergency Medicine Residents

Lall M, Beck S, Meer J/Emory University, Atlanta, GA

Background: Ultrasound has become a standard component of Emergency Medicine training. Most residency programs fulfill this requirement with a dedicated rotation. [i] At our institution this occurs in the intern year and focuses primarily on the ACEP core applications.[ii] This focused time allows intensive exposure, but for many residents, scanning declines after competency in the basic applications is achieved.

Educational Objectives: We sought to renew interest in ultrasound by presenting two advanced workshops on nontraditional content. Sessions covered ways ultrasound could augment or replace aspects of the physical exam. and ultrasound guided nerve blocks.

Curricular Design: Two workshops were implemented during a Post-Graduate Year (PGY) 2 resident class session. Each workshop was divided into brief modules which included a brief case-based didactics immediately followed by 10-15 minutes of hands-on practice scanning. This back-and-forth approach allowed the residents to immediately practice the presented content.

The physical exam workshop covered splenomegaly, acute mitral regurgitation, aortic dissection, hepatomegaly, jugular venous distension, patellar tendon rupture, and shoulder dislocation. The nerve block workshop covered posterior tibial, ulnar, radial, femoral, sciatic, interscalene brachial plexus, and supraclavicular brachial plexus nerve blocks.

Ideally every 3-4 learners in a workshop require: 1 instructor, 1 ultrasound machine, 1 standardized patient.

Impact/Effectiveness: Residents were given an anonymous self-assessment survey after the workshops. For the Physical Exam workshop, the residents all reported an increased level of comfort using ultrasound, and many of them reported they were using ultrasound more frequently after the session. For the Nerve Block session, the residents reported increased comfort performing these procedures, however there was not a significant difference in self-reported nerve block procedure numbers pre and post workshop. The main challenges reported with attempting ultrasound guided nerve blocks were difficulty identifying the nerve and lack of attending comfort level in supervising the procedure. These sessions could be easily replicated in other residency programs.

Table 1. Survey Results for Ultrasound as Adjunct to Physical Exam workshop.

	Yes	No	N/A
Attendance	9	3	
Use of Ultrasound increased after course?	6	5	1
Comfort Level increased after course?	10	1	1

Table 2. Survey Results for Ultrasound-guided Nerve Block workshop.

	Yes	No			
Attendance	8	4			
	zero	one	two	N/A	
# blocks done pre-session	5	2	3	1	
# blocks done post-session	0	3	1	2	
	Yes	No	Unsure		
Comfort level increased after session?	4	3	4		
	Finding appropriate patient	Time	Correctly identifying nerve	Attending comfort in supervision	N/A
Limitations in performing nerve block	1	1	2	1	3

16 An Airway Committee: An Innovative Way to Implement an Asynchronous Airway Curriculum

Dyer S, Wnek K, Romo E, Bobryshev P, Cook J, Leser E, Schindlbeck M, Nordquist E/John H. Stroger Hospital of Cook County, Chicago, IL

Background: It is imperative EM residents become competent managing difficult airways. Through an airway education needs assessment, it was learned that the PGY2 anesthesia rotation required improvement.

Educational Objectives: To improve the educational quality of the PGY2 anesthesia rotation and to increase the resident procedural competency and knowledge with difficult airways through asynchronous learning using a yearlong airway curriculum.

Curricular Design: An "airway committee", consisting of an EM attending with national airway teaching experience, a simulation fellow, and 5 upper level residents, was formed to outline and develop a novel asynchronous, multimodal airway curriculum to supplement the PGY2 anesthesia rotation and increase resident airway competency. A FOAM (Free Open Access Medicine) based reading list was sent to each PGY2 prior to the start of their anesthesia rotation to provide a foundation of airway management. This was paired with one-on-one simulation cases to apply this knowledge. Advanced intubation and peri-intubation topics were discussed quarterly in small groups during conference led by faculty and senior residents. Additional advanced airway procedural practice was provided in a cadaver lab twice a year and an in vivo demonstration of an awake intubation. Key articles regarding airway management were reviewed quarterly at attending led journal clubs.

Impact/Effectiveness: We present a novel approach on how to implement airway teaching into an EM residency through a yearlong multimodal curriculum guided by an "airway committee". Feedback has been favorable with 100% of residents reporting that the curriculum increased the

educational value of the anesthesia rotation. The total number of intubations obtained on the anesthesia rotation has significantly increased when compared to the previous year (15.0 vs 8.4, p=0.045). We believe this to be a successful approach to increasing resident knowledge and procedural competency.

17 An Email Prompt with Weblink Improved Faculty Participation, Volume of Returns, and Distribution of Emergency Medicine Resident After-Shift Evaluations

Dorsey S, Queen J, Lesniak D/Cleveland Clinic, Cleveland, OH; Cleveland Clinic, Cleveland, OH; MetroHealth Medical Center, Cleveland, OH

Background: Prior to September of 2013, the faculty of our Emergency Medicine residency program had initiated and submitted online after-shift evaluations per their own discretion. Overall engagement in the process, as evidenced by both raw number of generated evaluations as well as number of faculty routinely participating, had been disappointing. In addition, our Clinical Competency Committee had hypothesized that our process may have been subject to selection biases, resulting in a limited distribution of evaluated residents across the program's cohort. We endeavored to leverage the capabilities of our primary hospital's online trainee evaluation system (MyEvaluations.com Inc. c.1998 - 2015.) in order to positively impact these metrics.

Educational Objectives:

1. Increase overall number of after-shift evaluation returns.
2. Increase number of faculty members participating in the evaluation process.
3. Increase the distribution of collected evaluations across our cohort of residents.

Curricular Design: Starting in September of 2013, our faculty began receiving emails on the day of clinical shifts prompting them to log onto MyEvaluations.com through an imbedded link, and to complete an after-shift evaluation on a single specific resident. Assignments are manually inputted by our site Education Coordinators on a daily basis, with attention to both the resident and faculty shift schedules to ensure adequate opportunity for sufficient interaction. Our two primary clinical sites are urban emergency departments with a combined annual patient volume of 169,000 in 2014.

Impact/Effectiveness: See Figures 1 and 2 below. Due to logistical constraints, the new process was rolled out at our two clinical sites on two separate dates. Prior to rollout of the new process, the average number of monthly evaluations submitted was 61, with an average of 17 faculty participating. Post rollout, the average monthly returns increased to 185 submissions, with 45 faculty members participating.

With regard to distribution of evaluations among our 39 residents, the average number of residents evaluated monthly was 28 (72%) prior to the rollout date. After adoption of our new process, we demonstrated a positive trend (more residents receiving at least one evaluation,) with the average number of residents evaluated per month improved to 33 (85%.)

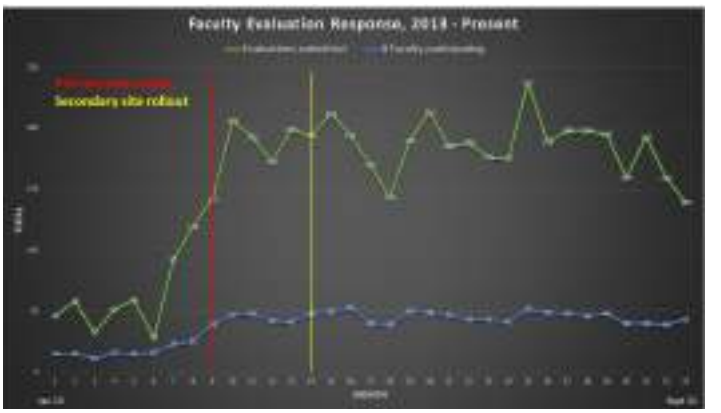


Figure 1.

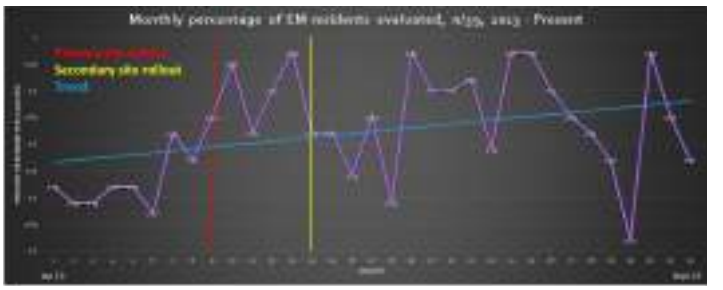


Figure 2.

18 Are the Top EM Residency Applicants Declining Interview Invitations Earlier in 2015: A Review of Declined Invitations from 2013-2015

Hernandez B/Regions Hospital Healthpartners, St. Paul, MN

Background: One of the major discussion points of Emergency Medicine (EM) program directors (PDs) has been that the top EM applicants, identified by high USMLE scores and AOA status, are applying to too many EM residency programs and accepting too many interview invitations based on their above average academic credentials. In addition to the time and cost associated with interviews, there are a finite number of EM interview spots. As a result, some of the other EM applicants, most of whom are solid students, are struggling to obtain enough interviews. As a point of emphasis, EM PDs have discussed making a more concerted effort to better advise their top students about the correct number of EM programs to apply and the number of interviews to accept. They are also encouraging the top students to cancel undesired interviews as early as possible to preserve interview spots for other applicants.

Educational Objectives: The question we sought to answer

is, has the effort by EM PDs to better advise top EM applicants had an effect this year? Are a greater number of top applicants who are invited early in the application season, cancelling unnecessary or unwanted EM interview invitations earlier?

Curricular Design: The ERAS database and Interview Broker were used to abstract applicant data from Healthpartners/Regions Hospital EM residency applicants for the last 3 years. The total number and dates of interview invitations and declined invitations, AOA status and USMLE scores were abstracted. The same criteria were used to invite applicants during all 3 years. The high quality of declining early applicants, based on percentage of AOA applicants and average USMLE scores, was consistent across all 3 years.

Impact/Effectiveness: The total number of interview invitations sent during the early invitation period (Sept 24 - Oct 10) averaged 85 invitations/year. During years 2013 and 2014 a mean of 87 applicants were invited and 80 were invited in 2015. Based on USMLE step 1 scores, these were above average EM applicants.

During the 2013/2014 seasons the average number of declined invitations in October=12 and November=10. In 2015, the number of declined invitations in October=23 and November=2.

When comparing the data between the 2013/14 and 2015 interview season the trend appears that the top applicants are not only declining more unnecessary interviews, but that they are declining them earlier in the application cycle. It will be interesting to see if this trend continues with EM applicants.

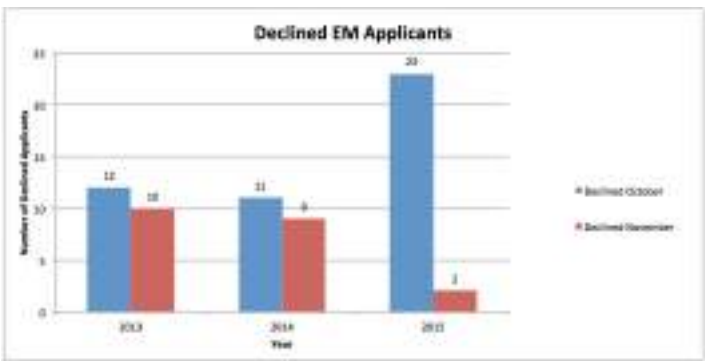


Figure.

19 Assessing Specialty Specific Milestones of 'Off-Service' Rotators during Emergency Medicine Rotation

Walter L, Edwards A/University of Alabama at Birmingham, Birmingham, AL

Background: EM faculty frequently train and evaluate non-EM residents, or 'off-service' rotators. There has been lack of standardized guidance however as to what competencies warrant assessing in any given rotator or what feedback might be useful to a rotator's 'home' service. This represents a missed opportunity to assess trainee milestones that are both sub-specialty specific as well relevant to the ED environment.

EM faculty at the University of Alabama at Birmingham (UAB) are responsible for teaching and evaluating rotators from several subspecialties during their ED rotations.

Educational Objectives:

1. Attain interdepartmental agreement on milestone core competencies, identified as both sub-specialty specific and ED relevant, for 'off-service' trainees rotating in the ED.
2. Obtain EM faculty evaluations of specialty-specific milestones for 'off-service' trainees rotating through the ED to provide appropriate individualized trainee feedback and a relevant evaluation for the rotators' 'home' service.

Curricular Design: Via interdepartmental collaboration, applicable subspecialty specific milestones were identified as relevant for 'off-service' rotator evaluation during their ED rotations.

The UAB Pediatric EM (PEM) Fellowship and UAB EM faculty identified ten PEM core competencies applicable to their fellows while rotating in the ED including 'Patient Care (PC),' 'Medical Knowledge,' 'Practice Based Learning,' 'Interpersonal and Communication Skills (ICS),' and 'Professionalism(P)' competencies. The UAB Anesthesia Residency Program and UAB EM faculty identified five Anesthesia-specific core competencies applicable to Anesthesia PGY-1s during their ED rotation (including 'PC', 'ICS', and 'P'). These competencies are assessed in binary form ('yes' or 'no') for each respective rotator shift in the ED by EM faculty.

Upon completion of ED rotation a final milestone score is submitted by the EM 'Off-Service' Rotator Faculty Director for each of the competencies. This final score, submitted to the trainee's 'home' service, is an aggregate of EM faculty shift evaluations and subjective comments, and serves as final evaluation of milestone competency attained during the trainee's ED rotation.

Impact/Effectiveness: With interdepartmental collaboration to identify milestones that are both subspecialty and ED relevant, EM teaching faculty can provide pertinent feedback to all 'off-service' rotators and accurately assess subspecialty specific core competencies for non-EM trainees. Additionally, this allows a more formalized way for the EM physicians to meet the new ACGME guidelines (NAS Program Requirements IV.A.5.g.1-5) by working in interdisciplinary teams and modeling Systems-based Practice.

20 Assessing the Effectiveness of our Current Curriculum in Educating Residents in Medical Error

Nobay F, Spillane L, Spencer M, Bodkin R, Pasternack J/ University of Rochester, Rochester, NY

Background: Error disclosure is a critical skill for emergency medicine resident's professional development. When an error occurs, critical steps in addressing the error include: acknowledging to the patient that an error occurred, discussing the clinical relevance of the error, addressing systems based issues that allowed the error to occur, steps taken to prevent future errors, and finally an apology by the provider to those involved.

Educational Objectives: To assess our current curriculum in error disclosure and to create changes to the curriculum if necessary.

Curricular Design: Our current curriculum includes hospital based and residency based activities. Residents attend a mandatory medical center presentation on error disclosure; residency based small group discussions and individualized clinical experiences. We assessed the ability of our residents to apply the principle learned to a cased based scenario that included multiple errors (omission and commission). Their answers were evaluated against a predetermined checklist of key principles in standard error disclosure. We compiled the results to evaluate areas for curricular improvement.

Impact/Effectiveness: 32 residents completed the assessment. 100% of residents acknowledged the error of commission (32/32), 34% of the residents did not recognize the error of omission (11/32). 31% did not explain the relevance of the error to the patient (10/32). 50% of the residents did not explain why the system allowed for the error (16/32). 15% did not describe how future errors would be prevented and 15% did not complete the critical step of apology (5/32).

This data emphasized that our current curriculum requires improvement. In addition, residents have knowledge gaps in error disclosure, particularly in identifying and managing errors of omission and explaining why errors occur. Future goals will be to augment the medical center based curriculum with an EM focused case based discussion of error disclosure principles. Cases will focus on language that support discussion of systems based errors with patients. The value and need for apology will be emphasized.

21 Billing and Coding Shift in an EM Residency: A Win-Win-Win Proposition

Takacs M, Stilley J / University of Iowa, Iowa City, IA

Background: Effective teaching of billing and coding has been well known to be deficient in emergency medicine (EM) residencies.

Educational Objectives: Our primary objective was to create an effective teaching method for billing and coding education in an emergency medicine residency via an inter-professional shift in our billing and coding office. Secondary objectives were to improve the efficiency and job satisfaction of our billers and coders and potentially to increase revenue in the department.

Curricular Design: We conducted a one-on-one inter-professional workshop with our lead coder. From September, 2014 to April, 2015 and during their EM 4 week rotation at the University of Iowa Hospital, one resident from each class was asked to sign up for a billing and coding shift between days 11 and 18 of their 28 day rotation. The lead coder worked individually with each resident providing a one hour interactive lecture, followed by a 1-2 hour exercise of residents coding a set of standardized charts followed by a feedback session of their performance on coding. We surveyed the residents within the week after their workshop as to the quality of this experience as a measure of our primary objective. We surveyed the coders in April, 2015 as a measure of our secondary objectives.

Impact/Effectiveness: 26 of 26 emergency medicine residents (100%) completed the inter-professional workshop and 19 of 26 residents (73%) completed the post-workshop self-assessment survey. A paired t-test on a 5 point scale comparing knowledge gained before and after the workshop showed an improvement from 3.3 to 4.3, $t = -6.18$, $p < 0.001$. Results of resident surveys are displayed in Table 1. Coders also were surveyed on a 5 point Likert scale with results in Table 2.

Table 1.

Resident Survey Question	LIkert Scale	Mean	SD
Gained a significant amount of knowledge	5	4.21	0.54
Found it beneficial	5	4.39	0.59
Wound change my clinical practice	5	4.26	0.81
Overall satisfaction with practice	7	6.16	0.60
Length of time was just right	3	2.16	0.37

Table 2.

Coder Survey Question	Mean	SD
Coders see consistent documentation of required elements	4.25	0.50
Identify that good documentation from prior year	5.00	0.00
Have seen improvement in documentaion	4.50	0.58
Note an increase in job satisfaction with well written notes	5.00	0.00
Able to process more charts with good documentation	5.00	0.00
Estimate of efficiency increase due to good documentation	38%	42%

22 Bystander Emergency Response - A Clinical Elective for 1st-Year Medical Students

Shuster J, Tobias A / University of Pittsburgh Medical Center, Pittsburgh, PA

Background: The traditional undergraduate education model begins with two years of basic science followed by two years of clinical education. The University of Pittsburgh School of Medicine created a Mini-Elective program to broaden clinical exposure for 1st (MS1) and 2nd year medical students. These electives provide information and skills that ease the transition to a clinical education while providing exposure to possible career interests.

We sought to develop a course offering exposure to Emergency Medicine while providing a skill set appropriate for the MS1.

Educational Objectives: This course provides a structured approach to the injured/ill patient for the MS1 with limited clinical experience and explores scenario-specific techniques for patient stabilization and management.

Curricular Design: Six two-hour sessions utilized a combination of didactic and simulation teaching. Each case simulation highlighted skills associated with basic life support (BLS) emergency response. The scenarios emphasized BLS maneuvers appropriate regardless of environment.

High-fidelity mannequins were used for case simulations. Review of key points from each session took place using PowerPoint or a re-demonstration of skill. Session topics included Approach to the Ill or Injured Patient, Basic Life Support, In-Flight Emergencies, Introduction to Wilderness Medicine, and Introduction to the Trauma Patient. Skills reviewed included evaluation of scene safety, donning of personal protective equipment, reviewing the ABCs, obtaining a focused history, cardio-pulmonary resuscitation, bag-valve mask ventilation, chinlift/jaw thrust, cervical spine immobilization, hemorrhage control, needle thoracostomy, long bone immobilization, and mass casualty triage.

Impact/Effectiveness: Pre and Post surveys were administered. 67% (N=12) of our students had no experience with direct clinical patient care prior to medical school. All students rated the course as Excellent with 100% of respondents (N =11) recommending this course to fellow students.

The Bystander Emergency Response Mini-Elective created an opportunity for MS1 students to gain life-saving patient and procedural skills. Students expressed a high level of satisfaction with the course and an increased level of confidence in responding to medical emergencies.

23 Changing the Tradition of Grand Rounds Using Google Hang Out

Smith T, Willis J, Silverberg M, Schechter J, Regan A, LoCascio H, Khadpe J, Rinnert S, Gernsheimer J/ SUNY Downstate / Kings County Hospital, Brooklyn, NY

Background: Access to medical education has expanded beyond the classroom, making the once traditional grand rounds speaker presenting at a podium a fading concept. Using Google Hangouts On Air, we invited speakers to speak at our weekly conference. This forum has increased the access to various lecturers at the convenience of both our program and the speaker, while also significantly decreasing the cost of grand rounds.

Educational Objectives:

1. Use Google Hangouts On Air to live-stream speakers from all over the world

Curricular Design: To broaden our grand round speakers, we developed a tele-conference lecture series using Google Hangouts On Air, a free teleconference platform, which allows participants to hold live webcam conferences. Through our pilot curriculum, we had speakers present for 10-15 minutes on high yield EM topics. The speakers gave their talk from their home or office as we projected their live stream presentation to the audience, who was then able to interact with the speaker. These sessions were recorded and made available via our residency website to be viewed by residents and faculty at their own convenience (refer to image A and B).

Impact/Effectiveness: This innovation can allow for residencies to obtain guest speakers from anywhere in the world for weekly conference with little to no set up cost with technology as simple as a laptop. This platform has been used successfully by online bloggers such as aliem.com and across Canada's EM programs. The researchers will assess the effectiveness of this lecture format by assessing the number of times the videos have been viewed at the site, and via a survey of the residents and speakers who participated.

Figure.

24 Comparison of Medical Student Feedback Versus Clinical Faculty Feedback on Resident Physician ACGME Milestones

Battagliali N, Stephens M / York Hospital, York, PA

Background: Emergency Medicine residency training programs are continuously looking for ways to evaluate their residents in the setting of the ACGME milestones. Prior studies have focused on resident feedback given by medical students- these studies indicated that residents found the feedback about their teaching and clinical performance useful and important. No studies, thus far, have looked at utilization of medical students as a means to provide resident feedback regarding ACGME milestones.

Educational Objectives: To study the utilization of medical students as an assessment tool when evaluating residents on four ACGME Milestones; Multi-Tasking, Professional Values, Patient Centered Communication and Team Management.

Curricular Design: Medical students rotating in the Emergency Department were given an evaluation survey that was used to assess 2nd and 3rd year residents in a three year residency training program. The students were asked to evaluate each resident that they had worked with during each shift. The evaluations contained questions regarding how a resident and performed on four different milestones; Multi-Tasking, Professional Values, Patient Centered Communication, and Team Management. The wording used is identical to wording used from the ACGME and ratings were given on the same 9 point scale that is used in the ACGME Milestones. Feedback from medical students will be compared to consensus scores for the aforementioned milestones as was determined by clinical faculty.

Impact/Effectiveness: Data collection to determine full impact is still ongoing. Medical students may be able to provide meaningful feedback to residents and program leadership regarding resident progression through these four identified milestones. Some of the milestones such as Patient Centered Communication and Professional Values can be difficult to assess by clinical faculty and medical students observe many of these interactions and may provide a different perspective on resident performance. Medical student evaluation would provide another facet of evaluation for residency programs to use in their 360 degree feedback process.

25 Creation, Implementation, and Assessment of a Near-Peer Taught, EM-Focused Electrocardiogram Curriculum for EM PGY-1s

Burns W, Lank P / McGaw Medical Center of Northwestern Memorial Hospital, Chicago, IL

Background: Electrocardiogram (ECG) interpretation is fundamental to the practice of emergency medicine (EM). Expert training needs to be provided during EM residency because only the basics can be assumed to be covered in medical school. Currently there is no nationally recognized or endorsed ECG curriculum for EM residents. We describe the implementation of an innovative near-peer standardized curriculum for first year residents in ECG interpretation.

Educational Objectives: Our primary objective was to develop a curriculum encompassing ECG diagnoses critical to the practice of EM, minimize the effect of varied medical school exposure, and provide enrichment via exposure to rare ECGs.

Curricular Design: Material from a cardiology elective as well as free open access medical education (FOAMed) resources were used to create 34 EM-focused cases which have been taught by near-peer (PGY-3/4) volunteers during established weekly PGY-1 educational sessions since July 2014. Cases with an ECG, FOAMed links, and challenge questions were emailed to PGY-1s in advance of a short (10-15 minute) small group. After each session an answer document is sent or further review and future use as a resource. This curriculum could easily be expanded to additional residency programs and since July 2015 is also being implemented at another program by a recent graduate.

Impact/Effectiveness: The Northwestern EM classes of 2018 & 2019 were surveyed on medical school education and the effectiveness of this innovation. 22 of 30 surveys were completed and 1 was incomplete. 13/23 (57%) of respondents believed that medical school prepared them to interpret ECGs in the ED either very poorly or poorly. 17/22 (77%) of respondents believed that instruction while working in the ED was ineffective or very ineffective split 10/11 (91%) and 7/11 (64%) between PGY1s and PGY2s respectively. Participants believed that this innovation was effective or very effective in 22/22 (100%) of responses. 16/22 (73%) of respondents believed near-peers (PGY2-4) are the most effective teachers, split 10/11 (91%) and 6/11 (55%) between PGY1s and PGY2s respectively, with EM attending at 4/22 (18%) and EM fellow 2/22 (9%) as the remaining responses. In summary, the effectiveness of this curriculum is perceived significantly more favorably than bedside instruction at this institution.

26 Developing a Clinical Track in Emergency Medicine To Teach and Assess Level 1 Milestones

Leung C, Hartnett D, Gardner S, Kman N / The Ohio State University College of Medicin, Columbus, OH; Georgetown University Hospital, Washington, DC

Background: Although EM Interns are expected to have attained competency in all Level 1 EM milestones

(EMMs) upon graduation from medical school, studies have shown that many have not achieved this goal. Evidence suggests that multiple different assessments over time are required to adequately evaluate competence in any particular domain. This may be difficult to achieve in a standard four week clerkship. A longitudinal elective, capstone course, or Clinical Track in EM may provide better assessment of EM milestones. At our institution, medical students are required to enter a specialty specific clinical track to work toward entry level milestones.

Educational Objectives: To describe the development and implementation of a Clinical Track in EM designed to give students the opportunity to achieve competency in all of the Level 1 EM Milestones (EMMs).

Curricular Design: A needs analysis was performed by mapping Level 1 EMMs to curricular components of required 4th year clerkships including a required clerkship in EM. New assessment methods for milestones that were not being adequately evaluated were then created and incorporated into a comprehensive longitudinal curriculum.

The Clinical Track in EM is comprised of a series of required 4th year clerkships and electives which allow development of the EMMs. Students can take Advanced Topics in Emergency Medicine, an EM elective specifically designed to teach Level 1 EMMs. Alternatively, students can combine recommended electives (anesthesia, ultrasound, toxicology, etc.) to obtain equivalent knowledge and skills.

Students on the EM Clinical Track complete a series of assessments as shown in Table 1.

These include:

1. Structured shifts for evaluation of EMM 1-8 and 17-23
2. Quizzes for assessment of EMM 5
3. Procedure log and checklists for EMM 9-14
4. A final simulation for EMM 1-8, 11, 13, and 23

Impact/Effectiveness: Seventeen students are currently enrolled in the EM Clinical Track. This curriculum may provide the foundation for successful student transition into EM residency. Information garnered from these assessments could be used to help program directors customize early residency education around strengths and weaknesses of their incoming interns.

27 Development of a Simulated Model for Corneal Foreign Removal

Janssen A, LaBond V / Michigan State University, Fenton, MI

Background: Ocular foreign bodies are common and occur on a daily basis in the practice of emergency medicine. Mismanagement of these emergencies can have serious consequences. Adequate early training of residents and medical students regarding the approach to this problem is essential. The procedure involves a delicate process requiring a unique skill set. Attempts to learn these skills on human subjects can be awkward and in some cases dangerous. Developing a realistic model to establish the foundation of this procedure is critical in the initial development for competence.

Educational Objectives: The objective was to design an ocular model that was life sized, realistic, low cost, and mobile that could have readily interchangeable parts to accommodate the greatest amount of learners. This would allow for practice in a non-stressful and safe environment.

Curricular Design: An adult sized foam head from a craft supply store was obtained. Orbits were drilled into the model, and spherical gelatin ocular globes molded from ice cube trays were held in place with tooth picks. A defined amount of glitter was measured and placed in the center of the globe replicating corneal foreign bodies. The consistency and natural tendency of the gelatin to "hold" the glitter to its surface replicated an actual cornea with similar foreign body adhesiveness. Additional globes could be replaced quickly and easily to keep participants downtime at a minimum. Learners were educated in a didactic session and then assessed on 15 point scoring system felt to be critical in the accomplishment of this procedure.

Impact/Effectiveness: The ocular foreign body simulator provides a realistic, cost effective method to enhance learning in a safe and non-stressful environment. This will positively impact the learner's practice when they encounter a patient with a corneal foreign body while maximizing patient safety. At the same time it will allow for an objective process for accessing procedural competency.

Figure 1.

Figure 2.

28 ED Patient Safety Rounds as a Source for Quality and Patient Safety Education and Quality Improvement

Farmer B / Weil-Cornell Medical College, New York, NY

Background: Patient Safety Leadership Walk Roundsâ„¢ were first introduced at Partners Healthcare in January 2001 as a way to engage frontline staff, throughout the hospital, in patient safety, to show frontline staff that hospital quality and safety leadership is interested in what they have to say about improving the safety of patient care, and to support a culture of safety. These rounds also serve as a source of safety concerns that might not otherwise be captured in event reporting systems, complaint letters, or quality reviews. Quality and patient safety (QPS) rounds were not routinely performed in our emergency department (ED) until 2013 when the QPS leadership expanded. Now QPS rounds are held once monthly in the ED clinical areas.

Educational Objectives: With the emphasis on patient safety in Emergency Medicine (EM) education though the patient safety milestone and the focus of patient safety as one of the 6 areas evaluated in the ACGME Clinical Learning Environment Review, we sought to use ED safety rounds as a way to illustrate QPS terminology and process improvement.

Curricular Design: EM residents are asked to participate in EM patient safety rounds during their administrative rotation, as a member of the ED patient safety team, and during their clinical shifts as a frontline staff member. Rounds occur during huddles after staff introductions of name and role for the shift. ED frontline staff are asked to suggest ways to improve the safe care of patients, to vocalize problems that have compromised safety, discuss workarounds that may lead to errors, and voice other concerns for patient flow, boarding, and clinical care. A member of the QPS leadership catalogues these concerns and steps are taken to determine ways to address each problem or concern.

Impact/Effectiveness: This hands-on approach illustrates patient safety concepts. By participating as frontline staff, residents see how a culture of safety is fostered within the ED and see how QPS leaders in the ED administration are working to improve safety and quality in the ED while improving patient care. EM residents also use the list of problems identified to develop quality improvement projects.

29 Electronic Health Record Reports can be Utilized to Provide Data About Residents' Practice Habits

Dodd K, Henkemeyer M, Miller M, Hirschboeck M, Rischall M, Gray R/Hennepin County Medical Center, Minneapolis, MN

Background: The ACGME requires that programs provide residents with data about practice habits. However, the 2014-2015 ACGME Resident Survey report shows that, on a national level, there is poor compliance with this requirement.

Educational Objectives: We sought to create a report within the electronic health record (EHR) that would provide residents with details on their practice habits in the emergency department (ED).

Curricular Design: In collaboration with our EHR analysts, we identified triggers within our EHR (Epic Systems; Verona, WI) to report numerous metrics, including: total number of patients seen (excluding patients signed-out to the provider), patient acuity, length of stay, treatment time, time to decision, number of laboratory and imaging tests ordered, time to first laboratory and imaging test ordered, number of procedures performed, and time to completion of charting. We then created a report in our electronic shift scheduling software to identify the number of hours worked by each resident so that the patients seen per hour metric could be calculated. We ran both reports from 7/1/2015 - 9/30/2015. The data was de-identified and divided by graduating class prior to dissemination (see Table 1 for an example of report data).

Impact/Effectiveness: In total, the 2016 ("PGY-3"), 2017 ("PGY-2"), and 2018 ("PGY-1") graduating classes had 15, 12, and 11 residents rotate through the ED during the study time period. PGY-3 residents saw 2.28 patients per hour in a supervisory role and 1.22 patients per hour as a primary medical provider. In addition to those metrics, PGY-3 residents saw an average of 0.22 critically ill patients per hour in the stabilization room. PGY-2 and PGY-1 residents saw 1.15 and 1.01 patients per hour as a primary medical providers, respectively.

We created a report within the Epic EHR to provide residents with information on their practice habits, as outlined by the ACGME. After several iterations of the report, we will analyze whether the report objectively or subjectively changes residents' practice habits, feelings towards the data that they are provided on their practice habits, and the results of the ACGME Resident Surveys.

Table 1. Example of Report Data.

Provider	Total Patients	Admit (%)	D/C (%)	Mean Acuity	Median LOS, min	Median Treatment Time, min	Median Decision Time, min
258	195	11%	89%	3.0	272	201	161
280	319	22%	90%	2.9	231	186	123
269	386	20%	90%	2.9	246	205	171
230	290	20%	91%	2.9	224	181	139
298	226	19%	95%	2.8	279	220	166
219	186	15%	94%	3.0	216	188	142
217	200	18%	85%	3.0	242	203	151
262	109	17%	90%	2.9	261	212	166
288	289	19%	91%	2.9	229	189	139
249	367	17%	94%	2.9	239	191	144
223	235	16%	95%	3.0	273	210	167
279	491	21%	95%	2.9	255	198	156
Overall	**3293**	**18%**	**92%**	**2.9**	**244** [IQR 162,366]	**196** [IQR 121,310]	**150** [IQR 93,239]

30 Evidence Based Medicine Longitudinal Track

Joyce M, Wills B, Evans D/Virginia Commonwealth University, Richmond, VA

Background: Emergency medicine is one of the newest fields in healthcare and is constantly evolving. Paramount to this is the ability for emergency physicians to remain current with practice changing research. Residency training provides a basic framework of evidence-based medicine (EBM) however additional education and feedback are needed for one to become proficient. The purpose of this curriculum is to add additional training for interested residents that want to improve their ability to practice EBM principles. The curriculum will focus on how to read, analyze, interpret and apply primary literature to the clinical practice of emergency medicine.

Educational Objectives: The overall goal of the evidence based medicine track is for the resident to answer a clinical question and create a clinical practice guideline for implementation into the emergency department using primary literature. The clinical practice guideline will follow the structure and format laid out by the ACEP clinical policy development process. This final goal will be met by a series of objectives to complete as the resident progresses. These objectives will develop fundamentals of evidence based medicine, focusing specifically on how to analyze and interpret literature (types of studies, design, data analysis, test characteristics), determine if they should be implemented into daily practice (GRADE criteria, CEBM scoring), and how to write a summary recommendation based on the evidence (ACEP clinical policy).

Curricular Design: The track is designed to be a one-year longitudinal supplemental educational opportunity for residents in good academic standing with specific interest in EBM, and provides one clinical shift reduction per ED block. The track is broken down into specific objectives that include tasks to help prepare the resident for their final project. These include: i) understand and apply diagnostic test characteristics, ii) improve ability to critically analyze medical literature, iii) become proficient in RefWorks, iv) determine a clinical question and complete a clinical practice guideline. Each objective has a measurable competency to allow assessment of progress.

Impact/Effectiveness: This track will have a significant impact on resident academic skills training and help develop skills necessary to be a lifelong learner and teacher. Residents who complete this track will have the skills and confidence to interpret literature independently and use this in their daily practice to provide safe and effective therapies supported by literature. This track was implemented in the 2013 academic year and the first resident to complete the track developed a clinical guideline on age-adjusted d-dimer. The resident also developed and mentored all of the journal clubs, and facilitated faculty teaching of EBM principals at resident conference. The following year this resident was awarded a scholarship by the Emergency Medicine Foundation to attend the Emergency Medicine Basic Research Skills course hosted by ACEP. This academic year our second resident is participating in the track.

31 Excellence in Ultrasound Education: An Innovative Longitudinal Approach to Bedside Hands-on Ultrasound Teaching

Haney R, Baran E/McGaw Medical Center of Northwestern University, Chicago, IL; Northwestern University, Chicago, IL

Background: In 2012 the ACGME included Emergency Ultrasound (EUS) as one of the 23 milestone competencies for graduates of an emergency medicine (EM) residency. Current ACEP EUS Guidelines (2008) stress the importance of emergency physician performed point-of-care ultrasound (POCUS) but do not detail how emergency medicine residencies should teach POCUS. In 2013, the CORD-AEUS consensus guidelines outlined key components of a residency POCUS curriculum and emphasized the importance of "active hands-on learning."

Educational Objectives: We sought to implement a longitudinal bedside hands-on curriculum to improve our current POCUS curriculum in light of the CORD-AEUS guidelines. Residents at our institution have an introductory POCUS course and an advanced POCUS curriculum integrated into our modular core lecture series, which include both didactics and hands-on scanning. Hands-on scanning for both components is primarily in the simulation setting. Our primary goal was to provide residents with protected time for scanning Emergency Department (ED) patients alongside EUS faculty members.

Curricular Design: We designed Excellence in

Ultrasound Education (EUE) sessions (one per resident per EM block lasting 3 hours each) during which small groups of 5-8 residents of all PGY levels were scheduled to scan in the ED. Sessions occurred after our weekly conference and incorporated small group (2-4 residents) or independent scan time during which, an EUS faculty member rotated through groups in order to provide real-time feedback. Each session concluded with group image review.

Impact/Effectiveness: We believe EUE sessions are an effective way to incorporate protected bedside hands-on scanning into resident EUS education. One year after implementation of EUE, a cross-sectional survey was sent to 55 EM residents with a response rate of 67%. Based on survey results, EUE sessions were considered a successful addition to resident POCUS curriculum as they increased the majority of residents' confidence with POCUS (Figure 1) and added value to most residents' EUS education (Figure 2). In the future we will increase the amount of hands-on scanning by EUS faculty members during EUE sessions as 71% of residents wanted more hands-on scanning.

Figure 1. Resident Confidence in EUS after EUE implementation.

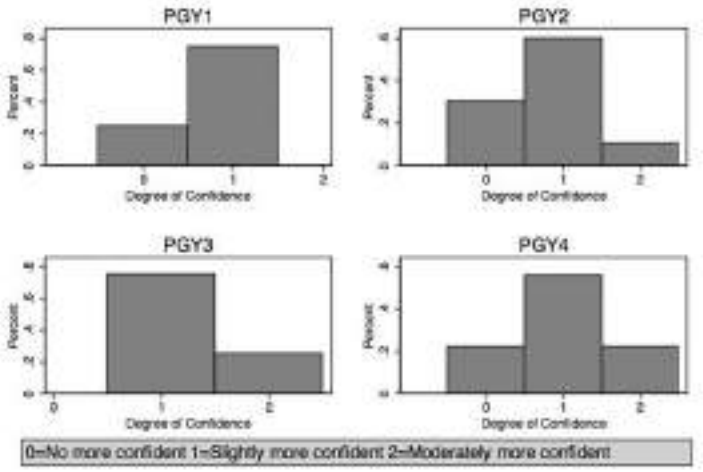
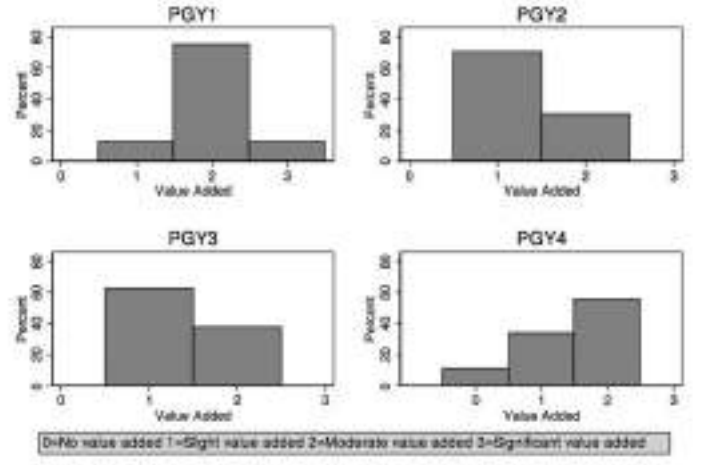


Figure 2. Value Added to Ultrasound Education by EUE Sessions.



32 Flipped Learning Initiative Program (F.L.I.P.): Flipping the Classroom with a FOAMed Supplemental Curriculum

Dyer S, Amin D/John H. Stroger Hospital of Cook County, Chicago, IL

Background: The fusion of medicine, education and technology has resulted in an explosion of Free Open Access Medical Education (FOAMed) and demanded we tailor our emergency medicine curriculum to meet the needs of our learners. There has been much debate on how to successfully incorporate FOAMed into pre-existing 'traditional' residency curriculums which have been the standard. A residency-wide needs assessment demonstrated residents wanted FOAMed resources as part of the curriculum.

Educational Objectives: To incorporate FOAMed resources into a pre-existing monthly textbook reading assignment as a supplemental curriculum while employing the 'flipped classroom' concept.

Curricular Design: Each month a block of textbook chapters are assigned for residents to read focusing on a core concept and then discussed at monthly faculty led small groups. In order to incorporate FOAMed and the 'flipped classroom' concept we created a supplemental curriculum to parallel the assigned textbook chapters. Using the Delphi method, each month a F.L.I.P. (Flipped Learning Initiative Program) page is created comprised of podcasts, blog posts, videos, published articles and 3-5 board review questions related to the assigned chapters. Residents are advised to read the assigned chapters but use FLIP as supplemental resources to aid in knowledge retention. The small group sessions are designed to be case based, covering the core topics through group discussion rather than lecturing.

Impact/Effectiveness: We propose a novel way to incorporate FOAMed into a residency curriculum as a supplement to traditional teaching that additionally employs the 'flipped classroom' technique. Feedback from a residency wide survey has been very positive with almost all respondents believing F.L.I.P. is an effective integration of FOAM. Furthermore a majority of respondents feel more comfortable and confident in FOAMed as a reliable resource and now use FOAMed more frequently.

33 Geriatrics Longitudinal Integrated Curriculum for Emergency Medicine Residents

Waller N, Shenvi C, Wilson L, Roberts E, Biese K, Busby-Whitehead J /University of North Carolina at Chapel Hill, Durham, NC

Background: In 2010 there were roughly 20 million ED visits by patients over the age of 65 and the number is

increasing. It is important for EM physicians to have an in-depth knowledge base for treating older adults. Despite this, most EM residencies do not have a formal training component that focuses on older adults. Geriatric EM is a growing subspecialty and should be a continuous thread throughout an EM residency curriculum.

Educational Objectives: To create an innovative Geriatrics Longitudinal Integrated Curriculum (GLIC) for training EM residents in the care of older adults that focuses on fundamental disease processes, presentations, and age-specific treatment considerations

Curricular Design: Many EM residency programs utilize a systems-based modular curriculum for weekly didactics that rotates every 18-24 months. Using this foundation, geriatric EM was integrated into EM conference to disseminate the fundamentals on an annual, continuous basis. Rather than creating a separate geriatric module, geriatric content was developed for each module, including but not limited to trauma, neurology, cardiology, gastroenterology/genitourinary, and psychiatry. Didactics were created to be innovative and interactive, case-based, and targeted to EM residents. Examples of geriatric content include small group activities in diagnosing and treating abdominal pain, workshops on evaluating standardized patients with delirium, lectures on polypharmacy and anticoagulation reversal in intracranial hemorrhage and trauma, and simulation exercises on geriatric trauma and ultrasound nerve blocks.

Impact/Effectiveness: EM residents have been very receptive to this longitudinal curriculum. It has reinforced the importance of special considerations when treating older ED patients. Residents now daily use terminology related to geriatric syndromes and consider the importance of entities such as delirium and recurrent falls. The curriculum has also helped EM conference and educational leadership to maintain consistent geriatric content in EM didactics in a sustainable manner. Through quizzes and direct observation of the GLIC, residency leadership is also able to evaluate residents on multiple milestones, including diagnosis, pharmacotherapy, pain management, professionalism, and patient centered communication.

	Geriatric content
Trauma	Lecture and simulation on Geriatric Trauma
Orthopedics	Lecture and simulation on hip fractures and/or femoral nerve block using US
Internal Medicine	Lecture on Iatrogenic Injuries
Neurology	Lecture on head bleeds/reversal
GI/GU	Small group workshop on abdominal pain cases
Resuscitation	Lecture on Palliative Care, Workshop on Delivering Bad News
Cardiology	Lecture on Atypical ACS & EKG workshop
Toxicology	Lecture on Polypharmacy
Psychiatry	Lecture & Standardized patient workshop on Delirium/Dementia
ID & International	Lecture on Care Transitions

Figure.

34 Implementation of a Resident-Driven Patient Safety and Quality Improvement Experience

Lavine E, Rabrich J, Egan D, Clark M/Mount Sinai St. Luke's Roosevelt, New York, NY

Background: As part of the ACGME's growing emphasis on patient safety and quality improvement (QI), residencies must deliver didactics and develop methods by which residents take part in meaningful activities related to these topics. Not only do the milestones emphasize involvement in patient safety, institutional CLER visits focus on resident exposure to these concepts.

Educational Objectives: In addition to traditional conference didactics, it is important for residents to identify potential patient safety and quality improvement projects with realistic interventions and measurable outcomes. We sought to develop a patient safety experience involving and driven by the residents in our three year EM training program.

Curricular Design: Each year, faculty deliver formal didactics on quality improvement topics related to the basic principles and methodology of continuous QI such as process mapping, LEAN and PDSA cycles. After the didactics and introduction, each resident must develop a proposal for a patient safety project over a period of several weeks. The resident's written proposal must identify a problem in the ED, complete a review of pertinent literature, and suggest interventions and measurable outcomes. Residents are then divided into small groups guided by a faculty preceptor, and ultimately select one team project per group. Over the duration of the academic year, teams meet outside of conference to develop and implement their project. The entire residency is brought back at the end of the academic year for team presentations on their intervention, outcomes, and lessons learned.

Impact/Effectiveness: We are now in our third year of this quality improvement and patient safety longitudinal experience. Examples of projects include: handwashing interventions, alarm fatigue, trauma resuscitation team training, door to urine dipstick times, airway box restructuring, and post-intubation care. As a result, all residents have had an immersion experience in a practical CQI and patient safety experience multiple times over the course of training satisfying ACGME and CLER requirements while contributing to resident-driven improvement in patient care.

35 Implementation of a Three-Pronged Strategy Improves Resident Performance on the In-Training Exam

Parikh S, Radeos M /New York - Presbyterian / Queens, Flushing, NY

Background: In an effort to improve resident performance on the ABEM In-Training Exam (ITE) and simultaneously increase their depth of medical knowledge, we developed a three-pronged approach to adequately prepare residents. This approach included:

1. Creation of small-group learning sessions to replace hour-long didactics. We also eliminated one hour of weekly conference time and replaced it with one hour of asynchronous learning. Half of conference time was devoted to small group sessions. The other half remained as large audience sessions, thereby preserving Grand Rounds, M&M, and joint specialty conferences such as Trauma and Critical Care.
2. Institution of a weekly one-hour focused board-review session during the five months preceding the ITE.
3. Utilization of an online database of EM board-style questions with a built-in self-assessment tool.

Educational Objectives: The primary focus and objective of this educational innovation was to improve the overall medical knowledge of residents while simultaneously preparing them for the annual In-training examination.

Curricular Design: The first part of our intervention was taking two hours of conference time and devoting them to small group learning. We divided residents into four smaller groups. Each group rotated through four 30-minute stations. Each station was led by a resident group leader who had been previously paired with a core faculty member, providing a more intimate learning experience given the smaller educator:learner ratio.

The second part of our intervention included a weekly one-hour, high-yield board preparation session instructed by core faculty. Attendance was mandatory for PGY-1s and residents on academic remediation. Attendance was optional for all other residents.

The third part of our intervention included a subscription to an online database of 2,000+ board-style questions. Residents individually completed these questions as part of asynchronous learning. The database included self-assessment tools, which utilized personal statistics to identify individual strengths and weaknesses.

Impact/Effectiveness: Implementation of this three-pronged strategy led to significant improvement of ITE scores from 2014 to 2015. In 2014, residents were substantially below the national average. Whereas in 2015, resident scores improved significantly and class averages were substantially above the mean. Our PGY-1 mean score increased by 9 points, moving this group from 3 points below the national mean to 6 points above the national mean. Our PGY-2 mean score increased by 5 points, moving this group from 2 points below the national mean to 3 points above the national mean. Our PGY-3 mean score increased by 3 points, moving this group from 2 points below the national mean to 1 point above the national mean. As supported by the data above, implementation of this three-pronged strategy was successful in improving ITE scores and overall improving resident medical knowledge.

36 Improving Emergency Medicine Residency Documentation Training: A Needs Assessment

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Background: The medical record is complex, serving to communicate to other providers, bill for services and mitigate medicolegal risk. Emergency medicine (EM) program directors and residents agree that documentation skills are often not taught well during residency. However, the areas of documentation that residents feel most lacking in are not known.

Educational Objectives: To identify perceived areas of need in documentation education using a cohort of junior emergency medicine residents.

Curricular Design: An anonymous survey was developed by medical education faculty, edited for content validity by an online cohort of medical educators, piloted on the target audience for relevance and clarity and then emailed to PGY1 and PGY2 residents. Junior residents were felt to be most likely to have knowledge gaps regarding documentation. Survey assessed self-reported competency in documentation for communication with other providers, billing, and medicolegal reasons, attitudes towards documentation, barriers to effective documentation, as well as previous education and interest in further education on documentation. A 5-point Likert scale was used to record answers.

Impact/Effectiveness: The response rate was 83% (25 of 30). Attitudes toward documentation education were very favorable, with 96% of respondents somewhat or strongly interested in learning more. Residents felt weakest about their knowledge of how to chart to protect themselves medicolegally, with only 16% somewhat or completely agreeing that they know what to include. They felt best about documenting to communicate with other providers, with 50% of respondents somewhat or completely agreeing that other providers could understand the patient's emergency room course by reviewing the chart. The next step will be to create a curriculum that fills these gaps which can be utilized by EM programs across the country to improve residents' knowledge and efficacy with documentation.

37 Innovation in EM Education Design Challenge - A Novel Approach to Advance Medical Education

St George J, Rich J, Won J / Weill Cornell Medical College, New York, NY

Background: The 21st century is defined by increasingly rapid cycles of change not just in technology, but in education and medical knowledge. This "disruptive" process brings

opportunity and risk: accelerated change is an occasion to reimagine how we teach. It also strains the limits of our traditional didactic structures and challenges medical educators and institutions alike to keep pace. This rapidly expanding space between new opportunities and the pace at which current educators and institutions are able to implement them is what we call the "education gap."

Educational Objectives: For medical education to remain engaging and relevant we must address this gap. To do this requires expanding our conception of what is an educational tool, and integrating new structures within our institutions that provide ongoing access to this 21st century zeitgeist. Our objective was to develop a educational tool (the design challenge) to integrate new technology, engage residents and faculty, promote collaborative projects and mentorship , and provide an formal system for the residency program to keep pace with new tools and educational opportunities.

Curricular Design: Here we present our experience with the implementation of a Design Challenge model.

Participants were introduced to concepts for effective learning, asked to identify barriers to their learning, and then challenged to overcome them during the 8 hour design challenge. Participants were introduced to collaborative social media platforms as well as novel tools that could be harnessed for education and then divided into small groups. At the end of the day, each group's work was uploaded to our social platform and presented.

Impact/Effectiveness: Feedback from the day suggested that this was a powerful tool for medical education: it empowered participants to actively engage in their own learning, revealed an untapped reserve of potential talent among our residents to be educators, and laid the groundwork for iterative student and resident-driven change within our program. Since the design challenge multiple resident driven and student research projects and content development have been initiated. Several conference and education days have highlighted work that was created as a direct result of our design challenge. This appears to have had a significant impact on our program's educational direction.

Figure.

38 Interactive Video-assisted Procedural Curriculum for Uncommon Emergency Medicine Procedures

Gorbatkin C, Bothwell J, Walsh R/Madigan Army Medical Center, Tacoma, WA

Background: Procedural competence is required in the management of uncommon conditions in the emergency department, and mastery of these skills is essential in the practice of Emergency Medicine.

Educational Objectives: We developed a weekly interactive and video-based curriculum to hone uncommonly utilized procedural skills for our program of 36 emergency medicine residents. Objectives includes procedural competence for essential emergency medicine procedures, as well as competence in interactive medical education for resident instructors.

Curricular Design: First, we performed a needs assessment by polling our faculty physicians as well as emergency medicine residents to determine which uncommon procedures required additional training in our program. Examples of procedures included pediatric jet ventilation, perimortem cesarean delivery, transvenous pacing, advanced airway techniques, regional nerve blocks, fracture reductions, and penile injection and aspiration for priapism. After the needs assessment, we searched for the highest yield instructional videos of each procedure. We developed a 52 week procedural curriculum. Second-year residents with attending physician mentors were assigned as lead instructors for each weekly 30 minute procedural morning report. Lead instructors guide the learners through the selected video. Selected videos include those from academic faculty around the country, Youtube.com, NEJM, or other online resources. Each resident learner then performs the procedure on mannequins or tissue models.

Impact/Effectiveness: The procedural morning report curriculum has enabled our program to further hone more than 50 uncommon procedural skills that are essential to the practice of emergency medicine. This enables residents and rotating learners to gain hands-on competence in these essential procedures. The 52-week curriculum receives excellent reviews from learners, and we utilize surveys to continuously review and improve the procedural curriculum.

39 Invasive Procedure Team Contributes to Procedural Mastery in a Combined Residency

Ramnarine M, Gong J, Gupta S, Marcus D, Mukherji P/ North Shore LIJ Medical Center, East Meadow, NY

Background: Combined Emergency/Internal/Critical Care Medicine (EM/IM/CC) residents occupy a unique niche

in hospitals. These residents translate their broad EM/CC skill-set to the IM setting, where they have filled the void left by the elimination of procedural competence requirements for certain bedside procedures in categorical IM training. These changes have led to a drop in the number of procedures performed by internists. Our EM/IM program has organized an Invasive Procedure Team (IPT) to perform bedside procedures in a safe, prompt and cost-effective manner.

Educational Objectives: To enhance resident knowledge and skills required in the performance of procedures with standardized didactic sessions, and to ensure patient safety and procedural competence.

Curricular Design: All participating residents undergo standardized didactic sessions for each of the procedures (central/midline catheter insertion, paracentesis, arthrocentesis, and lumbar puncture). Residents learn: indications, contraindications, overview of equipment tray, technique, and potential complications. Each procedural session uses: video instruction, hands-on simulator based instruction, ultrasound guidance, and a written post-test. Bedside procedures are supervised by an attending and competence is determined by direct observation after five successful attempts for each procedure. Findings and recommendations are communicated with the primary team and follow up is performed to assess for complications.

Impact/Effectiveness: IPT has standardized the training of residents to ensure patient safety and procedural competence. IPT performs ~400 procedures within the hospital every year, decreasing the utilization of costly specialty services. It has maintained an excellent safety record, with only 3 adverse events in 5 years (spontaneous hemoperitoneum after paracentesis). Residents and faculty are responsible for ongoing quality assurance and performance improvement.

40 Is Virtual Grand Rounds a Good Option for Resident Conferences?

Grall K, Koonce A, Barrett L, Hegarty C/Regions Hospital / Health Partners Institute for Medical Education, St. Paul, MN

Background: Inviting speakers to resident didactic conferences can be expensive and time consuming for both the program and speaker. Using remote meeting technology allows a speaker to share their desktop while seeing and speaking to a remote audience. We trialed one application in our residency program to bring in more nationally recognized speakers as experts on CORE curriculum topics.

Educational Objectives: Provide our residency program with more Nationally Recognized speakers on Core Curriculum topics while saving on cost and travel time for our speakers.

Curricular Design: We trialed inviting speakers to give instruction to our residents via remote meeting technology for a 3 month period. Speakers were selected for their expertise on a topic and invited to speak on a resident didactic conference date. A test run of the application was performed prior to their scheduled talk. Following the three month trial, a survey was distributed to our speakers soliciting feedback on the use of the technology. We also reviewed lecture evaluations from our residents, and informal comments from our residency administration.

Impact/Effectiveness: We found that the use of remote meeting technology enabled us to bring in more nationally known speakers without the speaker cost or schedule disruption due to travel. Speakers were able to use the technology with very little training or prep time.

Post- lecture evaluations revealed our residents appreciated the opportunity to have more nationally recognized guest speakers. Comments were generally positive, yet raised a few issues with the technology. (See Table 1)

Informal feedback from residency administration showed the need for practice runs, which allowed opportunity to connect with speakers prior to their scheduled talk. It was also noted that technology use with remote conferencing is easier with experience.

In conclusion, by using remote meeting technology, we found we were able to provide our residency program with more nationally recognized speakers while saving on cost and travel time for our speakers.

Table 1. Resident Comments.

Pro	Con
"Great talks-would like more of these virtual speakers."	"Difficult format for being able to ask questions - is there a way to facilitate that?"
"VSEE is AWESOME."	"You presented great information but I had a hard time staying with you. That could definitely be a product of the video format."
"Do more of this."	"Dr. X was great and she did a nice ultrasound overview. However I feel that VSee is not the greatest technology out there (it's very glitchy) and took a bit away from the presentation overall."
"Totally awesome - more please!"	"Would have better in person."
"Fabulous! Do this again please!"	
"VSee worked well for this!"	

41 Journal Club Redesigned: Small Groups, Landmark Studies, and FOAMed

Bounds R, Boone S/Christiana Care Health System, Newark, DE

Background: In residency education, the journal club is essential to teaching research methodology and critical appraisal skills necessary for developing emergency physicians. Designing a journal club format that engages learners of all levels of training and provides high value education is a difficult task. Often, designated "presenters" are assigned to prepare an in-depth analysis of the articles and anxiously present their findings to a larger audience; as such, the yield for the presenters is high, while the rest are passive listeners. Furthermore, the explosion of free open access medical education demands that educators guide residents in their incorporation of these resources with primary literature and clinical practice.

Educational Objectives: We redesigned our emergency medicine journal club to engage all learners in critical appraisal and incorporation of the literature into clinical practice through three novel methods: a focus on specific topics with landmark articles, analysis of social media resources, and division into small groups for discussion.

Curricular Design: Each journal club is focused on exploring a specific clinical question. A "landmark article" is selected, along with a background/supporting article and a relevant podcast or blog post. Residents are assigned to small groups, each including learners at all levels of training and facilitated by a faculty member. All PGY-1 residents are expected to lead the discussion on the background article. The PGY-2 residents present analysis of the landmark article. Then, the senior residents critique the podcast or blog, discussing bias, generalizability, and interpretation of findings. Following the small group discussions, the large group reconvenes to discuss and debate key points from each group. The residents assigned to lead journal club each month choose the articles and social media piece, moderate the closing discussion, and disperse a summary document with key points following the session.

Impact/Effectiveness: This redesigned journal club structure focuses on a key clinical question while incorporating a landmark article and social media interpretation. The interactive, small-group format engages all residents, holds learners accountable, and encourages greater dialogue regarding differing interpretations of important emergency medicine research.

42 Morbidity and Mortality: An Introductory Curriculum

Patel C, Lopez R, Howe K/SIU School of Medicine, Division of Emergency Medicine, Springfield, IL

Background: Morbidity and Mortality (M&M) conferences have been a staple of graduate medical education since 1983 however new residents receive little training on their purpose, structure, or utility as a tool for self and system evaluation. Given that poor patient outcomes are an eventuality, more time should be spent training residents in this area, not only for their success as a resident but long term career longevity.

Educational Objectives: Our goal was to provide our incoming interns with a good understanding about M&M conferences. We particularly focused on their purpose, structure and utility as learning tool. We intended for them to be better prepared to present and participate in our M&M conference.

Curricular Design: We designed a specific lecture series for our incoming interns that focused on addressing what we perceived to be deficiencies in medical school education that would be needed by our incoming interns. Included in this lecture series were lectures particular focused on the purpose and structure of M&M conferences. This was followed by a presentation of an actual resident M&M case. Prior to the lecture the residents were given the opportunity to complete an optional and anonymous survey asking them about their prior experiences and history with morbidity and mortality conferences as well as poor patient outcomes. After the lectures the survey was repeated. All answers were either on a scale of 1-10 or yes/no questions.

Impact/Effectiveness: The lectures were well received. Of the six new incoming interns, half of them had not been involved in a case where there was a negative patient outcome and none of them had presented a case of adverse patient outcome. After the lecture more residents felt they understood the purpose of M&M conferences (average 7.6/10 before the lecture vs 9.1/10 after the lecture). Additionally they felt they better understood their role as an observer (Average of 6.1/10 before the lecture vs 8.8/10 after the lecture). Finally, all the interns felt more comfortable with the idea of presenting an M&M and felt the lectures were a good use of their time. Given the effectiveness of this short curricular intervention, we believe that similar lectures should be part of the introductory training for our new residents, and could be applied to any residency training program.

43 Partners in Training, Partners in Care: Integrating nurses in EM Residency Training

Regan L, Peterson S, Bright L, Omron R, Neira P, Patch M/Johns Hopkins, Baltimore, MD

Background: Emergency Medicine (EM) as a specialty has embraced the model of interprofessional care teams in clinical settings. In addition to clinical training, EM program directors are required to ensure that residents are integrated

into interdisciplinary quality improvement programs during their training, as well as to collect data for milestones regarding team management and collaborative care of the ED patient. The CLER environment has emphasized institutional focus on interdisciplinary training and feedback. To achieve these aims, we sought to develop an innovative, interprofessional approach to incorporating nursing presence into core areas within EM residency training.

Educational Objectives: This innovative interprofessional approach intended to meet several objectives spanning multiple needs. See Table 1.

Curricular Design: Residency leadership engaged an interested member of the nursing leadership to develop a liaison role between the residency program and the nursing team. Opportunities for enhanced collaboration between the groups were identified. These collaborations and corresponding interventions were introduced in a step-wise fashion over the next 2 years. Innovative methods were employed to build a collaborative mindset that would support trainees into their future practice. These seven innovative methods are listed in Table 1.

Impact/Effectiveness: The innovative methods shown have met with wide spread acceptance and positive reviews. Post interview surveys from applicants have frequently listed "nursing interviewers" as one of the things most liked about the day, and qualitative comments from nurse partner program surveys have been universally positive. A total of 101 nursing staff generated 635 electronic evaluations over the 27 months the program has been active, many with detailed and constructive comments for the residents that have served as the impetus for remediation. Nursing presence has been a constant at M&M since the development of a nursing champion, with active participation from both leadership and nursing staff involved in the case. Overall, our multifaceted approach has improved interprofessional relationships in all areas and bolstered the level of clinical care our teams provide. We believe that programs across GME should find similar opportunities for inclusion of nursing staff to foster these outcomes.

Figure.

44 Procedural and Resuscitation Curriculum Addition to the Emergency Medicine Anesthesia Rotation

Girzadas D / Advocate Christ Medical Center, Oak Lawn, IL

Background: Early and longitudinal exposure to procedures is an important aspect of emergency medicine (EM) training. Sufficient experience with resuscitations and invasive procedures is a requirement of EM residency, but high yield procedural educational opportunities can be limited in a busy high acuity ED.

Educational Objectives: To optimize first year EM resident (EM-1) experience with resuscitations and procedures, we modified our required Anesthesia rotation to include a resuscitation/procedural component. Our goal was to increase EM-1 exposure to resuscitations and procedures, to improve the quality of procedural educational activities and to increase resident satisfaction during the rotation, all while meeting the original rotation objectives.

Curricular Design: The current EM-1 Anesthesia rotation consists of 2 weeks working with anesthesiologists to perform as many endotracheal intubations as possible. Residents move between operating rooms (OR) to identify anesthesiologists to supervise intubations and airway procedures. This system leads to open, non-structured time between cases.

Our curricular modification included an email notification to the EM-1 rotating on Anesthesia the week prior to beginning the rotation. Residents were asked to post their portable phone number in the ED so that trauma and medical resuscitation alerts in the ED could be forwarded to them by the ED secretary. Residents continued to pursue intubations in the OR. When the ED alerted them to a resuscitation or procedure, if the EM-1 was not involved in the OR, they would go to the ED to participate in the resuscitation/procedure.

Impact/Effectiveness: A survey was given to all 12 EM-1 residents at the end of the year. Eighty three percent of residents support continuing this curricular modification, and 100% of residents were either very satisfied or satisfied with the rotation. The average number of procedures/resuscitations was 3. A majority, 66% of residents felt they had more time to perform procedures than when on an standard ED shift, and 25% felt more comfortable with the management of critically ill patients after the rotation. The biggest obstacle was ER Staff awareness to the curriculum changes and notifying the EM residents in a timely manner of opportunities present in the ED. This simple but effective modification could easily be adapted to other rotations with periods of unstructured time.

45 Providing Culturally Competent LGBT Care to Patients in the ED

Monks S, Taylor S, Wells R/Texas Tech University Health Sciences Center, El Paso, TX

Background: Approximately 50% of all members of the LGBT community have delayed seeking care at the ED because they fear discrimination or denial of service. Research suggests that a general lack of understanding and knowledge of this community serves as one of the greatest barriers to the delivery of culturally competent care. This study aims to explore the attitudes, beliefs, and knowledge of EM residents in regards to the LGBT community.

Educational Objectives: Our goal was to develop a curriculum that would address the knowledge, attitudes and beliefs of residents toward the LGBT community. Areas of focus were enhancement of knowledge, cultural competency, implementation into practice and improved patient outcomes.

Curricular Design: Residents voluntarily participated in a series of activities over the course of a month including an assessment and follow up of attitudes, beliefs and knowledge of the LGBT community. Residents then engaged in a simulated patient encounter using a standardized oral board format. This was used to assess the ability of residents in training to provide culturally competent care to a patient from the LGBT community. A physician from the LGBT community presented on the specific needs of this population and provided evaluation of the curriculum.

Impact/Effectiveness: Overall residents reported being comfortable with providing care to members of the LGBT community in the ED. However, pre- and post-test show significant deficits in knowledge regarding this community supporting continuous use of this curriculum.

46 Quick Hits - Structured On-Shift Teaching Designed for the Busy Academic Emergency Center

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Background: Formal/structured teaching in a busy Emergency Department (ED) can be challenging. Many Emergency Medicine (EM) residency programs practice some type of structured on-shift teaching; but to our knowledge these efforts and their utility are not well described in the literature.

Educational Objectives: We implemented a structured on-shift teaching program with the goals of being practical, efficient, and easily replicable in the academic ED.

Curricular Design: We revised a pilot program for on-shift didactics entitled Quick Hits (QH)." QH consisted of a clinical pearl delivered by on-coming faculty during the sign-out process at two of the ten available sign-out transitions each day. This pilot project had an inauspicious trial and a second iteration was then implemented with several changes to address the challenges identified. The responsibility for giving QH was changed to the out-going faculty who simply used a teaching point based on a patient presentation from the current shift for the QH (residents had the option to give the QH, but ultimately it was the faculty's job to ensure compliance). The overall presentation was given a strict time limit of 1-3 minutes; and it was to take place at the beginning of EVERY sign-out (all ten available sign-outs to address faculty forgetfulness and resident requests for more teaching).

Impact/Effectiveness: Prior to implementing QH we had no formal on-shift didactic program. The first iteration had 31.9% overall compliance over a 6 month period. The revised design has yielded 41.6% overall compliance within a 5-month period and has generated 6.5 times as many teaching points across all resident shifts. The method of tracking compliance did not change between the two designs. Resident and faculty feedback has favored the new program over the first and there is no evidence that the sign-out process has been delayed in any meaningful way. We feel that the increased compliance rate and positive feedback was a result of the more streamlined and pragmatic approach. Key elements contributing to this success include a truncated time limit to avoid delays in patient care and post-shift physician departure; content taken real-time from on-shift encounters to decrease preparation time; and placing the QH at the start of every shift to better integrate teaching into the culture of our sign-out process.

47 RegionsRAP: Implementation of a Novel Journal Club Format Incorporating Instructional Technology

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Background: Traditional journal club (JC) curricula are created to promote best practices using evidence based medicine. Staying up-to-date is daunting with the rate of growth of primary literature. Instructional technology is engaging millennial learners, and Free Open Access Medical Education (FOAMed) has expanded recently with residents using online secondary summary resources (blogs, social media, podcasts, vodcasts). We devised a strategy to incorporate FOAMed resources into a new JC format to better engage our learners.

Educational Objectives: Our objective was to determine if our new JC was preferred to a traditional JC format.

Curricular Design: We developed a structured, longitudinal, curriculum to review FOAMed online resources.

Many selections were from the Academic Life in Emergency Medicine (ALiEM) Approved Instructional Resources (AIR) series. We reviewed 5 posts per one-hour session, assigning a resident to summarize/critique each using the ALiEM executive board's AIR grading tool. We met monthly to discuss and create a summary to distribute.

Following implementation, we solicited feedback via a short survey using SurveyMonkey™.

Impact/Effectiveness: We had a 67% response rate. Overall our learners preferred our JC to traditional JC, with 100% (4.85/5) Strongly Agreeing (SA) or Agreeing (A) and want more learning in this format (95% SA/A, 4.70).

Residents felt the new format improved their understanding of the subject matter (100% SA/A, 4.60), while incorporating learning methods they prefer (95% SA/A, 4.65).

Residents felt they were more likely to prepare ahead of time for this format as opposed to traditional JC (100% SA/A, 4.65). They indicated that the selections were appropriate to their practice (100% SA/A 4.55), the material had influenced their practice (95% SA/A, 4.10), and the JC introduced them to new and appropriate blogs and podcasts (95% SA/A, 4.65).

Residents also left very positive comments. (see Table 1)

In conclusion, we have found our residents strongly prefer our new JC to traditional JC format.

Table 1.

Comment Number	Comment
1	"Huge help. Like Regions RAP so much better than traditional journal club."
2	"It's nice to have several "quick hitter" type blog posts/podcasts as opposed to just two articles. Feel like we can cover more ground while still getting some evidence based teaching. This has been a good add to the residency."
3	"I really like this format--I like the diversity of resources. Let's keep it up!"
4	"I love Regions Rap. It is a great format, initiates great discussion, and exposes residents to helpful blogs. Great idea!"

48 Resident- as- Debriefer Curriculum: A Novel Approach to the Senior Resident Teaching Role in Simulation Medicine

Cook J, Wong A, Moadel T, Evans L/Yale School of Medicine, New Haven, CT

Background: The integration of healthcare simulation into EM residency curriculum is rapidly becoming the standard. Traditionally, residents have largely participated in simulation as learners. The ACGME describes the importance of resident competency in teaching, evident in several residency milestones (PC7/9/10, ICS1, PBLI1/2). To date, there is no standardized curriculum utilizing simulation to engage residents in the teacher role.

Educational Objectives: 1.Evaluate the effectiveness of a novel interactive debriefing curriculum to train senior EM residents in developing skills as educators for a 3rd year medical student simulation curriculum, 2. Analyze and compare the residents' debriefing skills pre and post- debriefing course.

Curricular Design: Traditional teaching methods often fail to uncover a learner's cognitive frame to close a specific knowledge gap. The goal is to apply evidence-based educational strategies from debriefing theory in simulation to improve senior resident teaching skills. Four EM trained simulation experts designed a 2-hour interactive debriefing course for the 11 PGY4 EM residents rotating through the simulation center over the 2015/16 academic year. The course consists of a didactic component outlining a stepwise approach to effective debriefing. This is followed by a post-scenario debriefing practicum after which the course instructors debrief the resident's debriefing. Residents facilitate debriefings for 3rd year medical student (learners) simulation sessions over a 2-4 week period. After each debriefing, they are assessed by the learners using the 'DASH Student Version', a validated debriefing assessment instrument. Data was collected pre and post-course and analyzed using unpaired t-test analysis.

Impact/Effectiveness: We plan to create a sustainable resident debriefing curriculum that is readily applicable to teaching in the simulation and clinical setting. From August to November 2015, 5 PGY4 residents participated in the course which focuses on techniques related to Element 4 of the DASH assessment instrument; guiding learners to identify and close knowledge gaps. Three out of five residents showed statistically significant improvement ($p< 0.05$) sustained over time in Element 4. Data collection for 6 more residents (total n=11) and video analysis of resident debriefing by expert simulation faculty are ongoing.

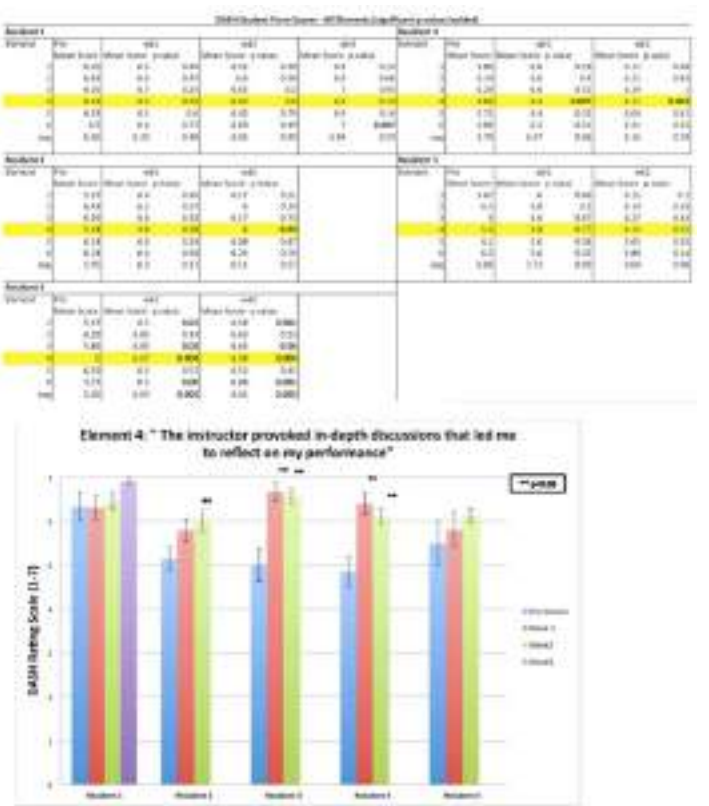

Figure 1.

49 Resident Coaching: An Innovation to the Traditional Resident Advising Approach

King A, Greenberger S, Thompson L, Panchal A, McGrath J, Khandelwal S/Ohio State University, Columbus, OH

Background: Traditionally, residents in our program chose faculty advisors to provide career development and ensure clinical competency; however, milestone data acquisition was poor. Our coaching program was instituted to promote resident attainment of clinical competency and acquisition of data to ensure progression through the ACGME milestones. All department education faculty serve as resident coaches and provide coaching to 3-4 residents yearly.

Educational Objectives: Provide residents with intensive individualized mentorship to maximize their development as emergency physicians by jointly identifying strengths and weaknesses, formulating specific educational goals for improvement, interpreting feedback, fostering professionalism and reflective skills, and fostering the identification and attainment of career goals.

Curricular Design: Coaches meet with their assigned residents at least three times each academic year and are instrumental in assisting the resident in promoting the argument for competence as exhibited by their overall portfolio. Coaches participate in semiannual clinical competency committee review of residents where they present each of their residents to members of the committee as their advocate of their overall clinical competence and milestone achievements. Additional coaching responsibilities include:

- Helping residents interpret faculty feedback and clinical performance metrics and provide them with resources to improve identified deficiencies
- Tracking resident completion of residency requirements
- Assisting in resident remediation or focused review programs
- Providing advice pertaining to career development and goals
- Helping residents identify milestone targets to be attained and assist residents in developing clear goals/action plans to reach these targets
- Monitoring resident wellness

Impact/Effectiveness: Implementation of our coaching program has resulted in a more accurate and robust milestone assessment and clinical competence determination of our residents. Resident perception of the program has been overwhelmingly positive; in fact, they specifically laud the improved feedback, faculty advocacy, and goal/career development. Despite necessary faculty development, faculty coaches have also embraced the program due to the intensity and overall impact of their mentorship to the resident learners.

50 Resident Didactics - Escaping Death by Power-Point

Joyce M, Evans D, Vitto M, Moll J / Virginia Commonwealth University, Richmond, VA

Background: Resident didactics are an important part of residency education, providing a core knowledge that every emergency physician must learn and master before graduating residency. Traditionally, this is accomplished using lectures containing core content and objectives in a classroom style presentation with PowerPoint slides. Recently there has been a trend in medical education to a move toward an adult-learner style of educating, including asynchronous education and interactive teaching. Our residency sought to change our five-hour weekly conference to fit with this style, and promote greater retention and understanding of the knowledge.

Educational Objectives: The educational objective was to develop a 12-month curriculum to cover all of the core topics. The curriculum is divided into topic blocks, with length of each determined by percentage of material reflected on the in-service exam. Specific objectives were:

- pertinent and succinct lectures on the core content
- asynchronous material to be completed both before and after conference to further develop the details of the core content presented
- interactive questions and images to promote participation during conference
- hands on skill sessions and simulation cases to match the curriculum

Curricular Design: The curriculum was designed to be more interactive and promote retention and participation. Lectures were shortened from one hour to twenty-five minutes with five minutes for wrap up and questions. A one-hour transitional 'lecture' was implemented that is question and answer style learning, such as board review questions, team quizzes, or interactive case based learning. During the final two hours of conference the residents divide up and break out into small groups either in the conference room or simulation lab, rotating through stations that re-enforce the topics taught that day.

Impact/Effectiveness: The change of curriculum has been widely accepted by our residents and faculty. Feedback has been overwhelming positive. Resident attendance has dramatically increased, from an average of 92 hours per resident pre-implementation to 126 hours post implementation. In-service scores increased from a residency average of 73.6 to 75.3. A residency website was created to house all of the asynchronous material and recorded lectures, and has become an essential resource of educational material for our training program.

51 Resident Generated ABEM Style Questions and Online Quiz Producing Program as a Cost Effective Method for Resident Medical Knowledge Milestone Assessment

King A, Gibbons E, Miller L, Harr-Weatherby E / Ohio State University, Columbus, OH

Background: The Accreditation Council for Graduate Medical Education (ACGME) defines 23 milestones with associated sub-competencies along a continuum for which residents are evaluated throughout their residency training. Frequent assessments, such as the ABEM inservice examination, quizzes, question banks, and clinical knowledge assessments, are integral to the accurate evaluation of the medical knowledge milestone. Our program employs a flipped classroom curriculum where assessments are vital to ensure adequate preparation for small group sessions.

Educational Objectives:

1. Utilize resident authored ABEM style questions and online test generating software to produce a cost effective method for a more robust resident medical knowledge milestone assessment.
2. Evaluate resident preparation for weekly small group discussions.

Curricular Design: As part of the flipped classroom pre-requisite preparation for small group discussions, learners are required to author one ABEM style question for each core content topic covered each week. Questions are assembled into a question database and provided to a member of the residency program leadership for review. The 10 best questions are chosen to comprise the weekly quiz. The quiz is produced using EasyTestMaker, which is available online for a yearly fee of $75. Quizzes are released to the residents following the completion of small group discussions, have a 45 minute time limit, and remain active for two weeks. EasyTestMaker generates a data report including resident completion date and grade for each weekly quiz.

Impact/Effectiveness: Purchasing question banks for an entire residency program can be cost prohibitive; therefore, we sought to create a "homegrown" question bank requiring minimal funds. Residents produce high quality questions which result in a more continuous and robust assessment of the medical knowledge milestone. These assessments also allow program leadership to evaluate resident preparation for small group sessions as well as residents who may require remediation or additional instruction regarding the medical knowledge milestone. Residents also have access to review the entire question bank as another method to prepare for the ABEM inservice examination.

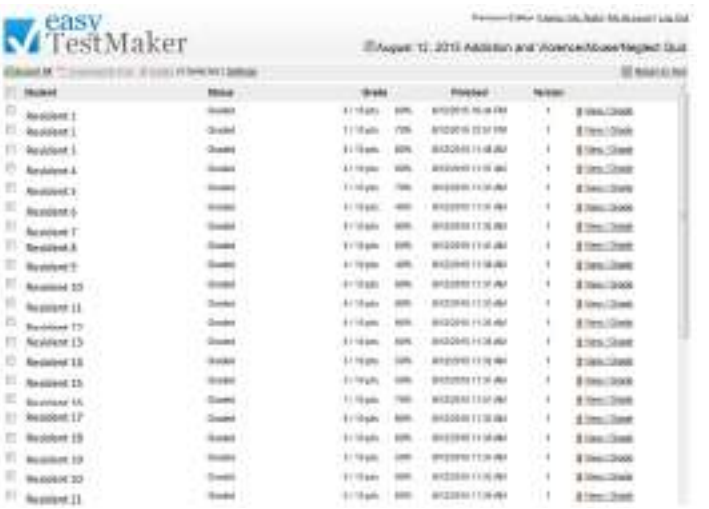

Figure.

52 Resident led Sim Debrief as a Longitudinal Learning Model

Pelikan A, Hayes A, Sampson C, Bausano B, Koboldt T/ University of Missouri-Columbia, Columbia, MO

Background: Simulation based education has rapidly become a cornerstone of emergency medicine resident education. These are carefully constructed clinical scenarios designed to give learners the opportunity to deal with real life emergencies in a controlled setting. The lessons learned are often deeply ingrained as they are from a personal experience versus reading about a topic or listening to a lecture. Unfortunately, the valuable lessons learned from Sim cases often ends with the case resolution, or at best following a debrief immediately afterwards. Using a longitudinal multi-week Sim debrief model, residents are able to take charge of their education and expand their knowledge base along with that of their classmates.

Educational Objectives:

- To enhance resident education through first hand experience via Sim cases ("to learn by doing")
- To fully utilize the educational opportunity presented in a simulation case
- To give residents the opportunity to teach their classmates using whatever

Curricular Design: Our Sim debrief model is based on a 3 week plan. Week one is the simulation session. This typically consists of 3 cases focused on high stakes medical scenarios. Teams of 5 residents rotate through all the cases, with the intent of having 3-5 main topics to design a mini-lecture on. Week two is presentations. Residents have a week to reflect on their performance and read up on the topic of their case. Presentations are meant to be informal, high-yield, and equally educational for

those giving the presentations as for those listening. Residents are encouraged to use whatever medium of information best fits their learning style, such as: power points, Socratic discussions, videos, handouts, and pod casts. Presentations last 10-15 min each. Week three is focused on knowledge testing. Each presenter creates 3-5 questions with explanations focusing on the highlights of their individual topics. This is designed to solidify main teaching points from the previous two weeks.

Impact/Effectiveness: Simulation has become an integral part of residency training. Unfortunately, among many residency programs it is an isolated educational modality separated from a more conventional curriculum. Using the debrief model, the invaluable first hand experience gained through simulation cases is expanded and integrated into the curriculum, with residents taking charge of their education in an active and dynamic method of learning.

53 Residents as Investigators: Original Research as a Universal Standard for Scholarly Activity to Teach Evidence-Based Medicine

April M, Thaxton R, Amack A, Kester N, Johnson J, Summers S / San Antonio Uniformed Services Health Education Consortium, San Antonio, TX

Background: The Review Committee for Emergency Medicine (RC-EM) requires that all residents complete scholarly activity. This requirement facilitates their education in evidence-based medicine. The basis for modern medical education as pioneered by William Osler is practical experience. Yet, there is no stipulation specifying that this research requirement must take the form of a completed original research project; specific alternatives cited include review papers, case reports, and performance improvement projects. A recent national survey of all Emergency Medicine residency programs found no consistent interpretation and implementation of this requirement.

Educational Objectives: We sought to construct a research curriculum facilitating each resident serving as principal investigator on a single original research project as a graduation requirement. We designed an intensive didactic curriculum structured around establishing the residents as investigators on department protocols for the purpose of obtaining practical experience executing various study designs. Subsequently residents are expected to design and execute their own original research projects.

Curricular Design: The curriculum entails a two-week intensive seminar halfway through intern year comprising active resident participation in ongoing department protocols of various methodological designs (e.g., randomized controlled trial, cohort, case-control) to better understand the mechanics of executing a research protocol. To measure performance, we defined six serial milestones to track each resident's individual research project from start to finish: (1) formulate a question with testable hypothesis; (2) develop protocol; (3) collect data; (4) analyze results; (5) prepare manuscript; (6) present and submit results for publication.

Impact/Effectiveness: The new curriculum began implementation in July 2015. Thus far, all 16 interns are on track for meeting the research milestones. In comparison to the last academic year, the number of newly submitted resident protocols to date has increased 67%, the number of abstract presentations 200%, and the number of peer-reviewed publications 150%.

54 Rethinking Airway Management Training in Emergency Medicine Residency Programs: Improving Resident Airway Skills with a Comprehensive Airway Boot Camp Course

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Background: For most residents in emergency medicine training programs, airway management skills are acquired and refined one case at a time while caring for patients in the emergency department and augmented with the obligatory off-service anesthesia rotation. Intubation experiences may differ between residents due to the variability of airway cases that present on any given day. Therefore, residents should be exposed to a standardized airway curriculum that covers core airway principals and management of difficult airway scenarios.

Educational Objectives: Improve all residents' airway management skills by providing them with an 8-hour airway course during intern orientation.

Curricular Design: The resident airway boot camp implements multiple learning modalities to engage the participants and more effectively reinforce basic and advanced airway concepts. Several interactive lectures incorporating an audience response system are augmented with hands-on breakout sessions. The hands-on training focuses on the familiarization of adult and pediatric intubation equipment and techniques, as well as airway adjuncts (i.e. bougie, extraglottic devices, video laryngoscopes and fiberoptic intubating bronchoscopes). Pig tracheas are used to realistically teach both surgical and percutaneous cricothyrotomy techniques. Finally, the residents test their newly acquired knowledge and technical skills by participating in 8 separate airway code simulations in a high fidelity simulation center.

Impact/Effectiveness: The participants (n=16) completed a survey before and after the airway boot camp, where they ranked their perceived skill level for different airway tasks. A comparison of pre and post survey results showed a statistically significant improvement in participants' perceived skill in 6 airway categories after completing the course: bag valve mask ventilation, adult endotracheal intubation,

Table. Residents' Perceived Skill Level Before and After Airway Course on a 10-Point Scale (1=lowest, 10=highest); n=16.

Airway Category	Pre-course mean ± SD	Post-course mean ± SD	p-value
Bag Valve Mask Ventilation	6.13 ± 2.25	8.44 ± 1.67	=0.0025
Adult Endotracheal Intubation	4.69 ± 2.21	7.69 ± 1.25	<0.0001
Pediatric Endotracheal Intubation	2.80 ± 1.42	6.81 ± 1.64	<0.0001
Use of a Bougie	2.94 ± 1.69	7.25 ± 1.34	<0.0001
Use of an Extraglottic Device	3.38 ± 1.89	7.31 ± 1.70	<0.0001
Cricothyrotomy	1.88 ± 0.96	6.56 ± 1.71	<0.0001

pediatric endotracheal intubation, use of a bougie, use of an extraglottic device, and cricothyrotomy (Table 1). Emergency medicine residents appear to benefit from a highly integrated, comprehensive airway training session, as a supplement to intubation experiences in the emergency department. The implementation of this curriculum ensures standardization of airway training for all residents.

55 Rural Emergency Medicine: A New Elective for Real World Experience

Kinchen D, Eastin C, Eastin T, Seupaul R / White County Medical Center, Little Rock, AR; University of Arkansas for Medical Sciences, Little Rock, AR

Background: In the state of Arkansas, there are approximately 150 board certified Emergency Medicine (EM) physicians (MDs). Of those, only 25% practice in towns of less than 50,000 people and only 15% are practicing in communities with less than 25,000 people. Of the 73 hospitals in the state of Arkansas, > 40 of them do not have a board certified EM physician on staff in the emergency department (ED). This is an alarming statistic in a state where access to tertiary care may be several hours away. Having trained EM MDs in these rural communities, would be an invaluable resource. The decision to create and develop an EM rural rotation strategically exposes EM residents to the practice of EM in resource limited communities and facilitates recruitment of highly trained board eligible clinicians to these medically underserved areas.

Educational Objectives:

- Develop skill and expertise in the management of:
  - Critically-ill & critically-injured adult and pediatric patients in an environment with limited resources.
  - Various toxicological, environmental, and traumatic emergencies unique to rural communities.
- Learn to manage the flow of patients as a solo practitioner with limited support staff.
- Develop communication skills and cultural awareness necessary to respectfully and effectively interact with patients, families, and other health care providers in the area.
- Develop an understanding of the local EMS system, services provided by the rural site facility, and need to transfer patients to higher levels of care including EMTALA compliance issues.

Curricular Design: PGY-3 EM residents are offered the opportunity to select the rural rotation as their senior elective. Rural site selection is based on targeted needs that ensure an optimal educational experience. Housing, travel, and resident salaries are supported by grant funds from the Arkansas Department of Health. Residents are required to work 120 clinical hours for the month with an equal assortment of days, nights, and weekend shifts directly supervised by a board certified EM MD. To ensure residents meet educational program requirements, teleconferencing, asynchronous resources, and on-site grand round opportunities are available.

Impact/Effectiveness: Feedback from residents who have completed the rural rotation has been positive. They report having more autonomy and a better understanding of the difficulties that exist when practicing in rural locales. They also felt the rural rotation offered more insight into what they are likely to experience once they have completed residency and are practicing in their own. Of the four residents who have completed the rotation, one has committed to join the ED staff at the rural site upon completion of residency. With this being a primary goal, we consider the creation of this opportunity to be a great success.

56 Scientific Speaker Apprenticeship Program

Phillips A, Diller D, Garmel G/Stanford University, Stanford, CA; Oregon Health Sciences University, Portland, OR; Kaiser Permanente and Stanford University, Stanford, CA

Background: Formal apprenticeship has long been part of medicine, yet no formal apprenticeship program currently exists to prepare physician leaders to present at scientific conferences.

Educational Objectives:

1. Understand the central components of quality presentation techniques.

2. Create the introduction to a formal presentation using the quality components discussed.
3. Deliver the introduction to a formal presentation using the tips provided by the lecture and your mentor.

Curricular Design: We created a formal apprenticeship program at CORD-EM for senior residents that consisted of 1) an interactive preparatory lesson with a nationally recognized lecturer, 2) targeted article list, 3) 1-1 mentorship by an established, veteran speaker, and 4) an opportunity to co-present with their mentor at the 2015 CORD-EM conference resident track by giving a five-minute topic introduction. We explored stakeholder opinions with surveys and a focus group.

Impact/Effectiveness: The participating 5 residents and 9 faculty mentors were uniformly supportive of the program, unanimously reporting that they would recommend it to their colleagues. The preparatory lesson and mentorship were both important components that contributed equally to creating and delivering presentations (Fisher's exact .200 and 1, respectively).

Importantly, Likert and narrative responses supported residents taking larger roles in the presentation. Thematic analysis (p=0.745) revealed that faculty thought the residents augmented their presentations.

Despite the extensive curriculum, the residents reported most appreciating an opportunity to speak at a national conference. This finding may suggest that it is difficult to enter the national lecture circuit, and a formal apprenticeship program is needed to facilitate the introduction of promising junior physicians to the lecture circuit sooner than traditionally feasible.

57 Simulation and Standardized Patient Encounters as a Method to Assess Residents in Emergency Stabilization (PC1) Milestones Routinely Identified as Difficult to Evaluate in the Clinical Setting

King A, Calcara D, Liddil J, Greenberger S, Panchal A, McGrath J, Green B, Khandelwal S/Ohio State University, Columbus, OH

Background: The Accreditation Council for Graduate Medical Education (ACGME) defines 23 milestones with associated sub-competencies along a continuum for which residents are evaluated throughout their residency training. The unpredictability of clinical practice results in significant variation in the ability to assess resident achievement of certain sub-competencies and milestones. Simulation is a key component of emergency medicine resident education and should be utilized in resident assessment of milestones which are difficult to routinely evaluate in the clinical setting.

Educational Objectives:

1. Develop unique simulation cases and standardized patient encounters designed to assess participating residents in specific milestone sub-competencies identified as difficult to routinely assess in the clinical setting.
2. Acquire multiple data points to ensure resident achievement in the defined sub-competencies in order to provide more accurate feedback to our learners.

Curricular Design: A simulation case involving a salicylate overdose and subsequent cardiac arrest was specifically designed to assess participating residents in the emergency stabilization (PC1) milestone. The level 3 milestone, evaluates the validity of a DNR order, was identified as difficult to routinely assess in other arenas. During the simulation encounter, the patient develops respiratory failure and decompensates. The residents are presented with a current valid DNR comfort care order; however, the patient's daughter urges the team to intubate the patient stating that the DNR was an error and was meant to only be considered if she was "terminally ill." Residents must then assimilate and interpret the data to determine whether or not to intubate.

Impact/Effectiveness: Targeted simulations can be successfully designed to acquire multiple data points to ensure resident achievement in defined difficult to assess milestones in order to provide more accurate feedback to residents. The level 3 PC1 milestone sub-competency, evaluates the validity of a DNR order, was identified as difficult to routinely assess in the clinical arena. Our case provides education faculty the means to ensure accurate resident achievement of this particular level 3 milestone. Resident feedback regarding this simulation and opportunity for assessment was overwhelmingly positive.

58 Simulation and Standardized Patient Encounters as a Method to Assess Residents in Patient Centered Communication (ICS1) Milestones Routinely Identified as Difficult to Evaluate in the Clinical Setting

King A, Calcara D, Liddil J, Greenberger S, Panchal A, McGrath J, Green B, Khandelwal S/Ohio State University, Columbus, OH

Background: The Accreditation Council for Graduate Medical Education (ACGME) defines 23 milestones with associated sub-competencies along a continuum for which residents are evaluated throughout their residency training. The unpredictability of clinical practice results in significant variation in the ability to assess resident achievement of certain sub-competencies and milestones. Simulation is a key component of emergency medicine resident education and should be utilized in resident assessment of milestones which are difficult to routinely evaluate in the clinical setting.

Educational Objectives:

1. Develop unique simulation cases and standardized patient encounters designed to assess participating residents in specific milestone sub-competencies

identified as difficult to routinely assess in the clinical setting.
2. Acquire multiple data points to ensure resident achievement in the defined sub-competencies in order to provide more accurate feedback to our learners.

Curricular Design: Several simulation cases were developed to specifically assess participating residents in the patient centered communication (ICS1) milestone. The level 4 sub-competency addresses the ability to use flexible communication strategies to resolve specific ED challenges such as delivering bad news and drug seeking behavior was identified as difficult to routinely assess in other arenas. The cases involving the delivery of bad news involved an incidental lung nodule concerning for cancer, ethylene glycol with multi-organ system failure, and severe esophageal variceal bleed. A case of a patient with chronic back pain evaluated the residents' ability to deal with the drug seeking patient.

Impact/Effectiveness: Targeted simulations can be successfully designed to acquire multiple data points to ensure resident achievement in defined difficult to assess milestones in order to provide more accurate feedback to residents. Level 4 of the ICS1 milestone addressing ED challenges was identified as difficult to assess routinely in the clinical setting. Our cases provide education faculty the means to ensure accurate assessment of resident achievement in this particular milestone. Resident feedback regarding this simulation and opportunity for assessment was overwhelmingly positive.

59 Simulation and Standardized Patient Encounters as a Method to Assess Residents in Patient Safety (SBP1) Milestones Routinely Identified as Difficult to Evaluate in the Clinical Setting

King A, Calcara D, Liddil J, Greenberger S, Panchal A, McGrath J, Green B, Khandelwal S/Ohio State University, Columbus, OH

Background: The Accreditation Council for Graduate Medical Education (ACGME) defines 23 milestones with associated sub-competencies along a continuum for which residents are evaluated throughout their residency training. The unpredictability of clinical practice results in significant variation in the ability to assess resident achievement of certain sub-competencies and milestones. Simulation is a key component of emergency medicine resident education and should be utilized in resident assessment of milestones which are difficult to routinely evaluate in the clinical setting.

Educational Objectives:
1. Develop unique simulation cases and standardized patient encounters designed to assess participating residents in specific milestone sub-competencies identified as difficult to routinely assess in the clinical setting.
2. Acquire multiple data points to ensure resident achievement in the defined sub-competencies in order to provide more accurate feedback to our learners.

Curricular Design: A simulation case involving a traumatic splenic rupture was specifically designed to assess participating residents in the patient safety (SBP1) milestone. The level 4 milestone sub-competency, leads team reflections - such as a trauma debrief, was identified as difficult to routinely assess in other arenas. During the simulation encounter, the patient is found to have a positive FAST scan and grade IV splenic laceration. Despite adequate management the patient decompensates and is taken to the operating room. The team leader is evaluated upon their ability to initiate and lead a team debrief regarding the patient's trauma resuscitation.

Impact/Effectiveness: Targeted simulations can be successfully designed to acquire multiple data points to ensure resident achievement in defined difficult to assess milestones in order to provide more accurate feedback to residents. The level 4 SBP1 milestone sub-competency, leads team reflections, was identified as difficult to routinely assess in the clinical arena. Our case provides education faculty the means to ensure accurate resident achievement of this particular level 4 milestone. Resident feedback regarding this simulation and opportunity for assessment was overwhelmingly positive.

60 Simulation and Standardized Patient Encounters as a Method to Assess Residents in Professional Values (PROF1) Milestone Routinely Identified as Difficult to Evaluate in the Clinical Setting

King A, Calcara D, Liddil J, Greenberger S, Panchal A, McGrath J, Green B, Khandelwal S/Ohio State University, Columbus, OH

Background: The Accreditation Council for Graduate Medical Education (ACGME) defines 23 milestones with associated sub-competencies along a continuum for which residents are evaluated throughout their residency training. The unpredictability of clinical practice results in significant variation in the ability to assess resident achievement of certain sub-competencies and milestones. Simulation is a key component of emergency medicine resident education and should be utilized in resident assessment of milestones which are difficult to routinely evaluate in the clinical setting.

Educational Objectives:
1. Develop unique simulation cases and standardized patient encounters designed to assess participating residents in specific milestone sub-competencies identified as difficult to routinely assess in the clinical setting.
2. Acquire multiple data points to ensure resident achievement in the defined sub-competencies in order to provide more accurate feedback to our learners.

Curricular Design: A simulation case involving a patient with an intentional acetaminophen overdose who refused care was specifically designed to assess participating residents in the professional values (PROF1) milestone. The level 3 and 4 milestones regarding alternative care plans (level 3) and ethical issues in complicated and challenging clinical settings (level 4) were identified as difficult to routinely assess in other arenas. During the simulation encounter, the patient continually refuses care and becomes increasingly agitated with each treatment attempt. The residents must evaluate the patient's right of refusal and decision making capacity in order to create a plan for evaluation and treatment despite the refusal.

Impact/Effectiveness: Targeted simulations can be successfully designed to obtain multiple data points to ensure resident achievement in defined difficult to assess milestones resulting in more accurate feedback to residents. Levels 3 and 4 of the PROF 1 milestone involving the sub-competencies alternative care plans and ethical issues were identified as difficult to routinely assess in the clinical arena. Our case provides education faculty the means to ensure accurate resident achievement of these particular level 3 and 4 sub-competencies within the PROF1 milestone. Resident feedback regarding this simulation and opportunity for assessment was overwhelmingly positive.

61 Take a Stab at It - A Novel and Economical Chest Tube Model for Procedural Skills Education

Fortuna T, Prusakowski M/Virginia Tech Carilion, Roanoke, VA

Background: Proper placement of chest tubes is required for efficacy and avoiding complications such as lung injury, blood loss, liver lacerations and damage to vessels and nerves. Simulators and models allow trainees to practice skills, overcome anxiety about complex procedures, and achieve higher levels of technical proficiency before attempting procedures on patients. High-fidelity simulators and commercially available task-trainers can be prohibitively expensive and costly to maintain or replace when used for teaching large groups.

Educational Objectives: Our educational needs included a chest tube model that could economically provide multiple chest tube insertion attempts to a large number of learners, and could be adapted to simulate different chest sizes.

Curricular Design: Our model was constructed using materials readily available: 1-gallon plastic jug ($1.00), plastic wrap ($2.19), package of latex balloons ($0.99), pork spare ribs ($2.99/lbs.), 3-inch foam tape, and super glue.

Model construction: Empty the jug and lay it on its side. Opposite the handle, cut a 3x4 inch rectangular window. Place a balloon in the spout of the jug and inflate so that it fills the inside of the jug and tie off. Glue the side opposite the opening to a piece of plywood. Cut a section of spare ribs to cover the window and wrap the ribs in plastic wrap. Next, use foam tape to secure the slab of ribs over the opening.

Procedure: Make an incision in the "skin" (foam tape), then bluntly dissect down to the ribs and puncture through the intercostal muscles. The opening can be enlarged with Kelly forceps and when a finger is inserted the "lung" (balloon) is palpated. Next, insert a chest tube through the opening and secure using silk suture.

Impact/Effectiveness: The biggest impact of this innovation is that this model can be constructed for about $10 whereas a commercially available task trainers cost $4,300 and the replacement inserts (which endure 6 sticks) cost $184 each.3 It simulates some of the important landmarks for ensuring proper placement, with direct visualization through the clear jug. Learners can also experience some of the potential complications of chest tube placement such as, injury to lung tissue, misdirection of the tube, and tunneling under the skin.

This model was used during our recent Emergency Medicine Symposium where over 50 physicians and advance care practitioners participated in a chest tube skills station. At a low-cost we were able to provide a realistic model for multiple learners to use. The feedback from this skills station was overwhelmingly excellent.

Figure 1.

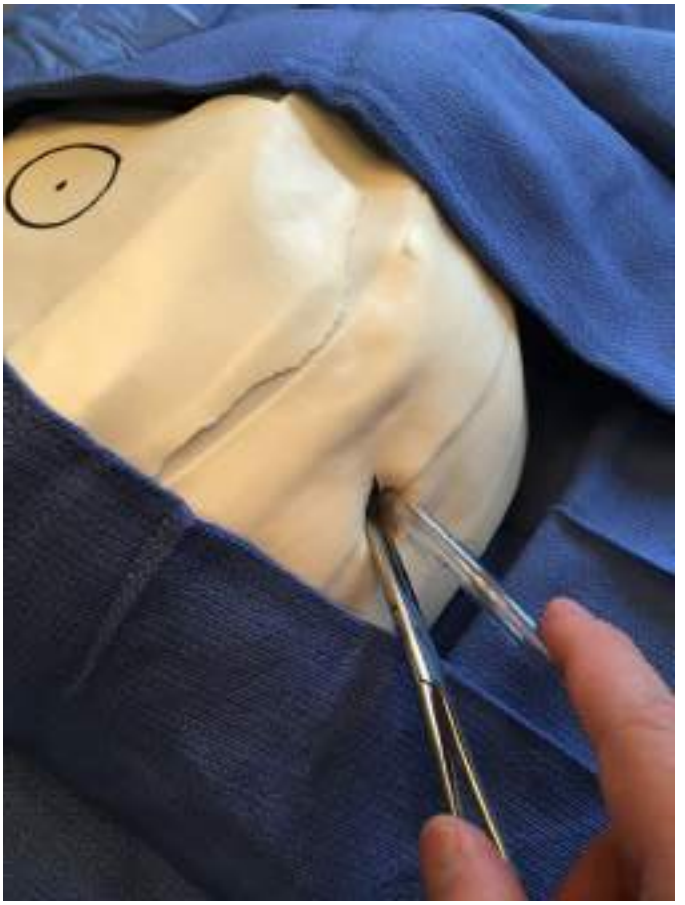

Figure 2.

62 Teaching the Teachers of Point-Of-Care Ultrasound (POCUS): Creating a Checklist for an Objective Structured Teaching Examination (OSTE) for Instructors of the Focused Assessment with Sonography for Trauma (FAST) Exam

Sanders S, Byrne E, Baran E/Northwestern University, Chicago, IL

Background: Competency in POCUS is required by the Residency Review Committee for multiple medical specialties not just limited to Emergency Medicine. As ultrasound use increases there is a need to ensure that senior residents and faculty are adept at instructing novice learners in POCUS. OSTEs focus on the teaching skills of residents and faculty and have been utilized to evaluate and enhance clinical teaching. There is a lack of literature detailing OSTE use in teaching procedures like POCUS.

Educational Objectives: We sought to create an OSTE checklist that could be used to evaluate an instructor teaching a FAST exam to a novice ultrasound learner. This OSTE is the basis for creating a curriculum for the instructor and evaluating the effectiveness of teaching the teachers of POCUS.

Curricular Design: A panel of faculty from our institution with both POCUS and medical education expertise created a preliminary OSTE checklist after reviewing the literature. The checklist was organized into three parts: short didactics, hands-on scanning and overall learning climate. We conducted a cross-sectional survey which was IRB exempt. We sent the draft checklist to a convenience sample of ultrasound directors for review. We asked specifically, "Is each particular point/item important for a FAST teacher to perform when instructing a novice ultrasound learner?" and the results were recorded in a binary fashion.

Impact/Effectiveness: The checklist was reviewed by 13 US directors nationally. A cutoff of 75% of respondents scoring the item as YES/KEEP was used to determine whether individual items should be kept or dropped. The final OSTE checklist reflects a total of 29 items out of the original 33 draft items (Table 1). Creation of a FAST OSTE will facilitate the development and evaluation of curriculum specifically designed for the instructors of POCUS starting with the core application of the FAST exam.

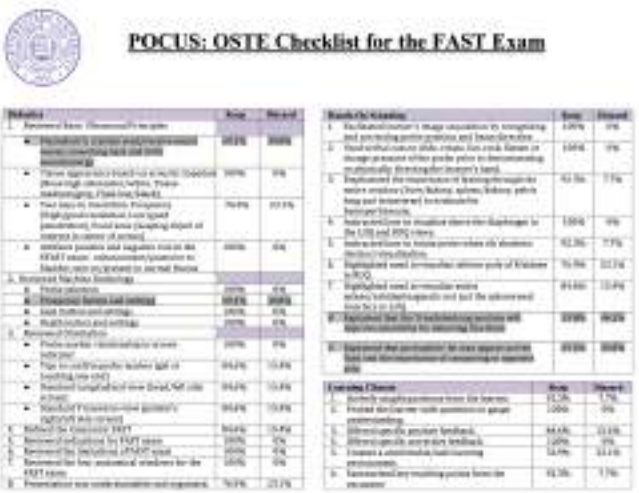
POCUS: OSTE Checklist for the FAST Exam

Figure.

63 Teaching Video and Hands on Learning Improve Slit Lamp Exam Workshop

Mason J, Najarian S/MetroHealth Medical Center, Cleveland, OH

Background: Learning through multimedia can fill gaps in less commonly performed procedures and clinical exam skills. 4th year medical students (MS4's) and interns are generally uncomfortable and not proficient with slit lamp exams (SLEs). A concise video presentation that can be watched prior to an educational workshop, and also available for review on shift improves the provider's comfort and proficiency in performing a SLE. This model incorporates video learning, interactivity, practice, and repetition, which have been shown in prior studies to improve learning outcomes.

Educational Objectives: To create a concise video presentation teaching how to perform a SLE.

To show this video immediately prior to a hands-on workshop.

To make this video available for independent review and on shift.

To evaluate the effectiveness of the video and workshop.

Curricular Design: A slit lamp exam workshop is held for new interns during their orientation, and for MS4's during their visiting rotation. A 3 minute video is shown first, followed by a hands-on workshop with an instructor present. This video is then available online for independent review. Students and residents are given a pre and post-test to assess content knowledge, and a pre and post-survey of their feedback on the experience.

Impact/Effectiveness: The SLE video and workshop are an example of an educational model that incorporates multimedia. Clinical skills can be taught through media, followed by a hands-on experience, with the media available for review at the learner's discretion. Concise teaching videos can be accessed on shift for quick review immediately prior to using these skills.

Summary of data:

- Mean scores increased from pre-test to post-test from 5.86/10 to 8.79/10.
- Learners felt more comfortable performing a SLE, evaluating eye complaints, and troubleshooting the slit lamp after the workshop and video.
- Learners found the video helpful, with useful content and appropriate length.
- Learners stated they would be likely to access the video on shift.
- 100% of participants replied that the video was helpful, and that content and length were appropriate.
- This SLE teaching video can be shared with other programs. More importantly, this educational model can potentially improve clinical skills in medical education.

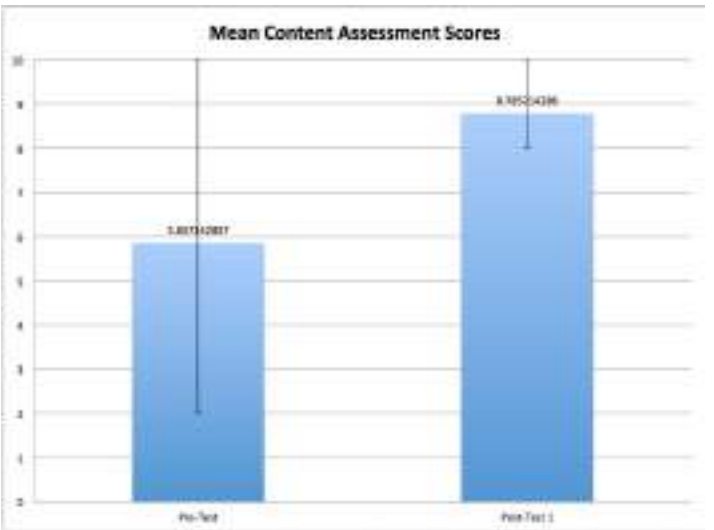

Figure 1. Mean Content Assessment Scores.

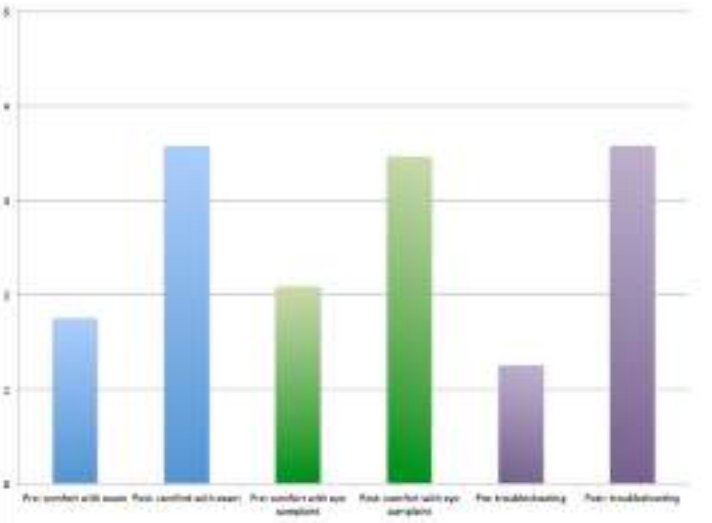

Figure 2. Pre and Post Survey.

64 The ABCs of Empathy

Chinai S, Bird S, Boudreaux E/University of Massachusetts, Worcester, MA

Background: Empathy is declining amongst healthcare providers despite the delivery of compassionate care being an important core tenet to the practice of medicine. The reasons for empathy decline are multifactorial, however one particular variable has significant implications for empathy: burnout. There is a need to increase empathy both for patients and for providers; however an educational model to teach these skills does not exist to our knowledge. This innovative curriculum is the intervention for a prospective randomized controlled study.

Educational Objectives:

1. Increase empathy
2. Decrease burnout

Curricular Design: The ABCs of Empathy is a multi-modal educational approach to increase empathy and reduce burnout designed for EM residents. It is focused on mindfulness, patient-centered communication and reflection. The ABCs represent Awareness, Breathe and Be Present and Care. This mnemonic embodies an easy way to incorporate empathy both for the provider and for the patient in every encounter. It was delivered to the intervention group of residents on 2/11/15 and 2/18/15 from 10a-12p. Components of the curriculum included personalized empathy measure report based on their patients' feedback, empathy powerpoint, standardized patient encounters, reflective writing exercise with appreciative inquiry, what are you thinking/feeling exercise, practice making empathetic statements, and discussion of positive ED patient experiences.

Impact/Effectiveness: 10 intervention group residents completed evaluations about the curriculum. They were asked to rate their satisfaction level with the individual components

of the curriculum on a Likert scale (0=poor, 2=below average, 5=average, 8=above average, 10=excellent). Means on all of the components of the curriculum ranged from 7.1 (reflecting writing exercise and practice making empathetic statements) to 8.8 (discussion of positive ED patient experiences). 9/10 residents recommend the training to other residents. This curriculum can be easily incorporated into residency conference didactics nationally.

65 The Consultant Chat: A Novel Didactic Method for Specialist Presentations to Emergency Medicine Residents

Bounds R, Fredette J/Christiana Care Health System, Newark, DE

Background: While emergency medicine (EM) faculty are generally the most appropriate teachers for EM residents in the didactic setting, there are particular components of the EM curriculum that benefit from specialist input. Many times, however, specialists have little appreciation for the challenges inherent in EM practice. In addition, presentations by specialists may address topics that are relevant to their practice, but outside the scope of EM. Residency leaders feel challenged in giving constructive feedback to speakers from outside departments, as many specialists are contributing their time without contractual requirements or personal benefit.

Educational Objectives: We developed the "Consultant Chat," a novel didactic format for specialists that are frequently consulted by the ED. These experts are motivated to share knowledge with our residents that will impact patient care and may even prevent unnecessary phone calls from the ED. Furthermore, the educational needs of our residents are met without delving into issues outside the scope of EM.

Curricular Design: Expert consultants are selected by the senior EM residents and invited to come have a "chat" with our residents for one hour during the EM conference time. These specialists do not prepare a presentation; they simply answer questions and share their experience. Residents are instructed to come prepared with questions that are specific, case-based, or pragmatic: how would you expect us to approach "x" presentation? Under what circumstances would you want to be called in the middle of the night? What is your biggest "gripe" about things that you have seen from the ED? Take home points are recorded and distributed to residents as a summary document of "clinical pearls."

Impact/Effectiveness: The "Consultant Chat" has greatly fostered collaboration with our specialists from other departments. The consultants feel honored to be selected by the residents, there is minimal time commitment on their part, and the informal atmosphere is engaging for all parties. The residents drive the discussion to meet their education needs and this self-directed learning style allows them to derive maximal value from the session. Lastly, our faculty enjoy attending these sessions, as they can contribute their experience and management viewpoints and engage their specialist colleagues in a friendly educational atmosphere.

66 The Effectiveness of Individualized End-of-Shift Milestone Assessment Tools for Remediation

Lall M, White M, Stettner E, Siegelman J/Emory University, Atlanta, GA

Background: Among EM residency directors, there has been debate over how best to assess residents using the milestones in particular, when remediation is needed. Many programs currently use an end-of-shift (EOS) evaluation tool that presents the milestones for levels 1-5 for multiple sub-competencies. Because each sub-competency level encompass so many components, it is difficult to provide residents with detailed feedback regarding specific areas requiring improvement and to design an appropriate remediation plan.

Educational Objectives: Our objective was to create individual assessment tools (IATs) to identify the specific milestones requiring improvement for residents on remediation. Secondary objectives included assessing resident satisfaction with the IATs and perceived quality of faculty feedback.

Curricular Design: An IAT was designed for each of 5 PGY II residents on remediation. Each IAT included multiple milestones encompassing levels 2-4, with the language taken directly from the emergency medicine milestones. The IATs assessed 8-20 milestones and were used for a period of 2-3 months. At the end of each clinical shift, the resident was instructed to provide their IAT to the attending who would rate the resident's performance as either meeting, having some difficulties, or failing to meet the milestone. The completed IAT was returned to the PGY II Assistant Residency Director (ARD). A paper form was employed to facilitate real time evaluation.

Impact/Effectiveness: The IAT allowed us to collect multiple data points for each milestone, and compare that data with the EOS evaluations obtained during the same time period. These were found to be concordant across almost all milestones. The residents received more IATs compared to standard EOS evaluations during the remediation period (Table 1). This approach can be applied to any individual resident to identify specific deficiencies within a sub-competency, facilitating a more complete and targeted approach to remediation. The residents using the IATs were anonymously surveyed regarding the tool. They reported that the IATs were easy to use, and that they were more likely to receive honest feedback about their shortcomings and more concrete suggestions for improvement using the IAT. The IATs worked well as a remediation tool because they provided

a more focused assessment of resident performance with specific written feedback.

Table 1. IATs versus standard EOS evaluations.

Resident	# Sub-competencies (IAT)	# Milestones (IAT)	# IATs Completed	# Shift evaluations Completed
1	11	20	19	12
2	11	20	11	4
3	4	6	20	14
4	10	16	12	12
5	10	16	14	7

67 The EMR Playground as a Platform to Train Novice Learners in Safely Ordering Weight Based Medications

Spillane L, Nobay F, Marks L, Acquisto N/University of Rochester, Rochester, NY

Background: Medication Error remains one of the most frequent problems plaguing patient care especially in pediatric patients requiring weight based dosing. Appropriate weight based dosing is a difficult skill to acquire because of a lack of specific training using an EMR, poor system architecture design for practical ordering and novice learners unaware of potential pitfalls of the EMR. Based on the observations of faculty, nurses and ED pharmacists, we identified common sources of errors and designed a curriculum to address these inadequacies in training.

Educational Objectives: Provide residents with the skills required to safely order weight based medications in realistic volumes and doses using the EMR. In addition, we wanted to emphasize the concepts of safety gaps inherent to an order entry system.

Curricular Design: Patient scenarios were developed in which learners were asked to order commonly prescribed pediatric weight based medications that had been identified as "at risk for error" orders. A virtual learning environment was created within the EMR "Playground". Learners completed 6 cases in small groups with each learner responsible for a single order entry. At the conclusion of the session, faculty led a review of all orders, types of errors commonly encountered, and demonstrated correct order entry techniques emphasizing systems based issues and strategies to avoid errors. The content was reinforced through a time lapsed review of the learning objectives

Impact/Effectiveness: Pediatric faculty, nurses and pharmacists described a decrease in the numbers of errors frequently made when prescribing pediatric weight based medications. They noted a decrease need to clarify minimum and maximum doses and less time correcting impractical medication orders. Residents felt that they were more confident in ordering pediatric weight based medications using the EMR. This workshop highlighted the danger inherent in using a weight based medication order entry system in the pediatric population. The principles can be extrapolated to a wide range of medications not covered specifically in the scenarios. Future goals would include increasing the time allocated for the workshop, availability of the workshop to non-EM resident learners and implementation of a formal milestone based assessment of competency.

68 The Long Path of Milestones

Calandrella C, Nelson M, Cassara M/North Shore Manhasset, Manhasset, NY

Background: Over the last few years, we have improved the metrics that help guide resident progression and overall competence but we have no great measurement of how we, the faculty are evaluated and evaluating. Often we hear about the tools that we are using to help us evaluate residents appropriately and which method is best to achieve that evaluation but no model exists for the evaluators to be educated and evaluated, We propose a faculty development curriculum to improve the ability our staff to appropriately evaluate residents. We held our first if several sessions to determine if we can all agree on the specific milestone being evaluated in a simulated patient care module and which level that resident achieved.

Educational Objectives: The objectives are to improve the understanding of milestones to the entire faculty, from recent graduates to long term physicians.

To introduce objective items that all attendings can use as a guide to help them rank the residents progression thru the milestone correctly.

Curricular Design: Our course consisted of a four hour didactics course that consistent of a guest speaker that introduced the evolution of the milestones and their role in resident education and progression.

Next we used four videos of clinical scenarios that highlighted two appropriate interactions of patient care and two inappropriate interactions. The attending group from 2 campuses (approximately 30) then had small group discussions on which milestones were being judged and which level they were achieving thru the simulated encounter.

The session concluded with a summary of which aspects to focus on when evaluating residents and the importance of sending more evals to have a broader data base.

Impact/Effectiveness: Since the completion of this session our attending submission rate for end of shift eval forms has increased. The residents are getting more feedback and are content to get more comments as a source of input than just a standard form submitted to corresponding milestones.

We recognize the path of a standard resident evaluation is a long one, but we are all moving down the journey together.

69 The Senior Retreat - Turning Learners Into Leaders

Marcus D, Ramnarine M, Mukherji P, Amato T, Kwon N, Farina G/Long Island Jewish Medical Center, New Hyde Park, NY

Background: Senior Emergency Medicine (EM) residents take on new roles and responsibilities - they are role models, intermediaries between administration and residents, and chiefs are selected from their ranks - but professional development needs may be unmet. 4th year residents at our program serve as Resident-in-Charge (RIC) of an ED Pod, supervising junior residents and functioning as a pre-attending. A resident/faculty poll conducted at our program revealed that expectations of the RIC were unclear and preparation for this role was perceived as lacking.

Educational Objectives: Goal: To prepare rising PGY4 residents for their clinical role in the ED and for the next step in their careers.

Objectives:

Residents will:

- Understand and describe the role of the RIC in the ED
- Reflect on the transition from learner to supervisor/ teacher
- Demonstrate an ability to utilize bedside teaching strategies and to provide feedback
- Evaluate and debrief team function
- Discuss CV's with faculty
- Discuss fellowship and clinical career pathways
- Understand the job application timeline

Curricular Design: We created a novel 1-day retreat using Kern's Six Steps for Curriculum Development. Specific needs assessment of graduating residents and rising seniors led to the Goals & Objectives listed above. The inaugural retreat covered: Becoming a RIC/Attending (team management, debriefing, teaching, communication), Career Pathways, Job Search, Fellowships, CV, Contracts. It was conducted offsite during the usual resident conference day. Strategies included: a leadership game, small group workshop, reflection, faculty discussion, role-play. The next year, responding to post-retreat feedback, we focused the retreat on RIC preparation and moved career planning to a separate meeting.

Impact/Effectiveness: The Senior Retreat is effective preparation for the PGY4 year. 100% found it to be Very Useful and said a retreat should be conducted every year; 100% stated they understood what was expected of the RIC. A follow up poll 5 months after the second cycle showed that: 67% of residents felt the retreat prepared them Well or Very Well for the RIC role; 50% stated there were gaps between the retreat and the RIC role in practice. Specific comments identified gaps that will be addressed in the next cycle. This intervention provides seniors with clarity and prepares them for the pre-attending role.

70 The Use of OSCE to Assess Patient Care, Professionalism and Interpersonal Communication Milestones in EM residents

Kulkarni M, Sule H, Ripper J, Murano T/Rutgers New Jersey Medical School, Newark, NJ

Background: Residents' achievement of Emergency Medicine (EM) milestones can be difficult to reliably evaluate in the clinical setting. Faculty tend to overestimate residents' achievement in the clinical setting and reply in the affirmative when asked questions based on milestones.

The Standardized Direct Observation Tool (SDOT) has been shown to be a reliable method of evaluating residents' clinical performance. The SDOT is not based on milestones and is challenging to administer in the clinical setting. The SDOT is also dependent on the patients who are available in the ED and clinical encounters can vary widely. We found the need for an evaluation tool based on the EM Milestones which would create a standardized experience for each resident. We developed an Observed Standardized Clinical Encounter (OSCE) to evaluate residents' performance of several of the EM Milestones.

Educational Objectives:

1. Evaluate residents' performance of EM Milestones in a standardized format
2. Provide residents with feedback on their performance of EM Milestones.
3. Provide residents with feedback on their communication skills and professionalism

Curricular Design: Four 20-minute OSCE scenarios were developed by a group of EM educators. One scenario was developed for each EM training year and included a checklist based on EM Milestones.

The OSCE was administered to residents by a faculty observer. The patients were played by standardized patients (SPs). Consultants were played by a faculty member or a senior resident. At the end of the scenario, there was a five minute period for feedback on performance of the EM Milestones and overall clinical performance, which was provided by the faculty member. The SP and faculty member provided feedback on patient communication and professionalism.

Impact/Effectiveness: This educational innovation allowed the administration of a standardized patient encounter with a Milestone-based evaluation. The OSCE allowed assessment of the Milestones that are more difficult to evaluate in the clinical setting, such as professionalism and

interpersonal and communication skills. Immediate direct feedback by the standardized patient was invaluable and well received by the residents. The OSCE provided valuable information regarding resident performance and may be used to track resident progress.

Table.

EM Year	EM milestones/Level addressed
1	Milestones 1,2,3 and 4 (level 1)
2	Milestones 1,2,3,4,5, 16, 18 and 19 (level 2)
3	Milestones 1,2,3,4,5, and 7 (level 3)
4	Milestones 2, 16, 20, 21, 22, 23 (level 4)

71 Use of a CPC to Demonstrate Resident Completion of Multiple ACGME EM Milestones

Kane K, Weaver K, Barr G, Quinn S, Goyke T, Smith A, Yenser D, Kane B/Lehigh Valley Health Network, Allentown PA

Background: The Clinical Pathologic Conference (CPC) is a case presentation in which an unknown case is presented to a discussant in advance of a didactic to prepare a presentation of an organized approach to a differential diagnosis. Several Emergency Medicine (EM) professional groups hold annual CPC competitions utilizing resident presenters and faculty discussants. Our group previously reported on the use of the CPC format to enhance faculty development.

Educational Objectives: To utilize the CPC format to document senior resident completion of multiple Milestones within the ACGME EM Project.

Curricular Design: This educational project was conducted at a dually approved 1-4 Emergency Medicine (EM) residency containing 13 residents per class. As prior to the Milestones project, all PGY 2 residents submit a clinical case including history, physical examination and initial data, as well as a separate case resolution including the final diagnosis and case outcome, noting relevance to EM. Due to time constraints of a 5 hour didactic session, the best 8 cases as judged by the program's CPC Chair (using the available CORD online "Selecting a Case for the CPC") were previously distributed to faculty and discussed. With the introduction of the Milestones Project, PGY 4 residents serving as case discussants could meet multiple milestones. Therefore, all 13 unknown cases were distributed to senior residents to evaluate.

Impact/Effectiveness: Given time constraints, 8 cases continued to be presented orally by PGY 4 discussants. The remaining 5 resident case discussions are returned to the CPC Chair in electronic format; they are evaluated by a core faculty member and then included in the resident portfolio. The 8 cases presented were evaluated by at least 3 faculty with CPC competition experience. The feedback on these forms is summarized by the CPC Chair, disseminated to the resident as feedback, and included in the resident's file. The organized discussion by all PGY 4's, depending on quality, serves to begin evaluating residents for the Level 5 anchors of Milestones 2, 3 and 4. It also can substantiate prior documentation of Milestones 2, Level 4; 3, Level 3; 4 Levels 2, 3, 4; and 6 Level 4. The most outstanding resident discussant represents the program at a state-wide CPC competition rather than a faculty member.

72 Use of Online Marketing Technology To Track Resident Engagement In A FOAM-Supplemented Curriculum

Justl Ellis I, Egan D/Mount Sinai St. Luke's Roosevelt Hospital Center, New York, NY

Background: Resident engagement in EM curricula is critical. Supplementing traditional textbook reading with FOAM-based content is becoming standard for modern EM learners. Possessing real-time, detailed data of resident engagement would allow for targeted intervention and tailoring of the curriculum. Survey-based studies of engagement are limited by recall bias and self-reporting. Modern technology allows for extremely powerful and comprehensive data collection affording new opportunities for improvement in resident education.

Educational Objectives: To obtain real-time, detailed tracking of resident engagement in an internet-based EM curriculum incorporating both traditional and FOAM materials, facilitating continuous improvement in resident education and providing data for study.

Curricular Design: We use a free, online, multimedia-rich e-mail delivery program (MailChimp™) as the delivery vehicle for our enhanced curriculum. Each week a senior resident generates an e-mail to residents with access to textbook chapters and primary literature, in addition to supplemental podcasts, blogs, and quizzes. MailChimp registers when, and if, a resident opens the e-mail or its links. The program continuously calculates "opened," "not opened," and "clicked" rates for the distribution list, subgroups, and individual residents both for specific e-mails and the year as a whole. Data are presented in an easy to interpret online dashboard. This allows for nearly effortless capture of resident engagement in the prescribed curriculum.

Impact/Effectiveness: Internet-based delivery and incorporation of FOAM into the curriculum has resulted in a more engaged and prepared resident body during conference. Data analysis allows us to identify which materials inspire the greatest resident engagement, and has shed insight into wide differences both between and within post-graduate years in preferred methods of learning; particularly notable is decreasing engagement with textbook-based materials with increasing level of training (see Table 1). There is significant enthusiasm for the new curriculum although wide variation in utilization by individual residents shows opportunity for continued development.

Table.

	Total Textbook Chapters Provided	39	Total FOAMed Items Provided	110
PGY-1				
	Mean Chapters Read	19	Mean FOAMed Items Read	18
	Median Chapters Read	17	Median FOAMed Items Read	16
	Standard Deviation	12	Standard Deviation	14
	Range	2 - 39	Range	1 - 48
PGY-2				
	Mean Chapters Read	12	Mean FOAMed Items Read	10
	Median Chapters Read	10	Median FOAMed Items Read	4
	Standard Deviation	10	Standard Deviation	12
	Range	0 - 39	Range	0 - 40
PGY-3				
	Mean Chapters Read	5	Mean FOAMed Items Read	15
	Median Chapters Read	3	Median FOAMed Items Read	9
	Standard Deviation	5	Standard Deviation	20
	Range	0 - 14	Range	0 - 77

73 Utilization of Educational Blogs to Supplement Self-Directed Learning and Small Group Based Didactic Sessions

King A, Adams D, Barrie M/Ohio State University, Columbus, OH

Background: The current generation of learner uses free open access medical education (FOAMed) such as blog posts, podcasts, Twitter and Facebook alongside traditional teaching methods such as textbooks and conference lectures to advance their knowledge of emergency medicine. The emergency medicine residency curriculum at The Ohio State University lacked any formal education to guide participation in the FOAMed community. We developed a system to publish regular posts on a departmental blog site to promote digital scholarship.

Educational Objectives:

1. Critically evaluate online sources for accuracy and applicability to emergency medicine practice.
2. To generate scholarly articles or blog posts appropriate for an emergency medicine audience.
3. Develop digital professionalism.

Curricular Design: Four residents were recruited as editors for the department blog site. They worked with the residency to generate scholarly blog articles with a goal to post one article per week. Topics could be related to the conference curriculum, interesting clinical cases, recent publications, or other areas of personal interest. The resident editors generated draft blog posts and then attending physicians edited for accuracy and readability. Attending editors removed any potential protected health information. Published posts were distributed on the department list serve and advertised on twitter. Since inception in September 2015, residents and attendings published 10 blog posts with 3427 views and 1995 visitors from 10 different countries. Residents that have participated in the process have felt a great sense of accomplishment and were engaged in the material more than typical lecture style teaching.

Impact/Effectiveness: The modern resident engages with online learning and discussion. Medical students and residents need instruction on how to navigate this online community and how to be active participates in digital scholarship. Through organizing regular posting on a departmental blog, a few resident editors have felt great accomplishment, honed skills of digital scholarship, and developed digital professionalism. Limitations include reaching the entire resident body, as only motived and interested learners participate regularly in the blog post production and discussion.

74 Utilizing E-Value as a Novel Approach to Create Small Group Modules and Review Completed Resident Coursework

King A, Gibbons E, Miller L, Harr-Weatherby E/Ohio State University, Columbus, OH

Background: The flipped classroom learning approach is recognized as the preferred curricular model in medical education. Our residency didactic curriculum is based on the flipped classroom design with small group discussions rather than traditional lectures to teach the core content of emergency medicine. Learner preparation is vital to maximize their mastery of weekly core content topics; therefore, methods to review completed assignments are necessary to ensure curricular success.

Educational Objectives:

1. Customize and utilize E-Value, our institution's chosen electronic organization system for medical education, as a didactic curriculum manager and method to create small group modules to be completed by resident learners prior to small group discussions.
2. Utilize E-Value to review completed resident coursework and provide feedback to the learners.

Curricular Design: Our residency program coordinator worked closely with E-Value developers to customize the interface to specifically meet our curricular needs. As curricular material is created by education faculty, small group

modules are created in the E-Value interface. Learners are required to review objectives, read weekly assigned material and list any additional evidence based medicine resources used to learn the material, submit one remaining question after reviewing material, and submit an ABEM style question utilizing the designed small group modules on E-Value platform. Facilitating faculty can review remaining questions in E-Value to enhance small group discussions. Independent learning plans (ILP), meant to foster self-directed learning in our residents, are completed on E-Value by resident learners. ILP force learners to record a question that developed during small group sessions, and to seek and provide an answer to the question posed.

Impact/Effectiveness: E-Value developers allowed residency leadership to innovate their interface in order to develop weekly small group modules to be completed online. Material was easily and efficiently completed and reviewed by residents and education faculty. Our novel innovation to this well established medical education platform allowed us to keep all education materials in a single, centralized platform. Our design ensured learner accountability in completing the curricular material, and allowed faculty to send prompt feedback to resident learners via E-Value.

Figure.

Best of the Best Oral Presentations

1 Residency Applicants Prefer Exact Timelines of Interview Offer Release Dates Over Rolling Admissions

Hern H, Alter H, Duong D, Gisondi M, Roche C, Trivedi T, White M, Wills C /Alameda Health System - Highland Hospital, Berkley, CA

Background: In Emergency Medicine, it is not uncommon for applicants to feel anxiety about applying to or interviewing at enough programs. There is a concern among program directors, that some applicants might be accepting more interviews than they can realistically go to. In the 2015-16 application cycle, some programs agreed to have a uniform release date of invitations to interview in an attempt to limit the number of excess invitations held.

Objectives: The purpose of this investigation is to examine the effect of unified release dates on the medical student satisfaction as compared to traditional individual program determined release dates as well as the rates of double booking of interviews.

Methods: This is a retrospective analysis performed on a sample of US medical students applicants at any of the 4 Emergency Medicine Residency Program sites participating in the study, 2 of which used a uniform release date, 2 did not. Results analyzed using test of proportions analysis.

Results: There were 555 responses out of 1464 US seniors surveyed (37.9%). Of respondents, 50.1% applied to more programs than their advisor recommended and 45.6% applied to the number recommended. When asked if they ever double booked 2 interviews for the same day, 31.6% replied they had and 6.9% did it 3 or more times. Applicants who were AOA were more likely to have "double booked" interviews (46.1% (41/89) vs. 28.7% (129/449) applicants p=0.001.) Applicants prefer an established date by each program on when they offer interviews. 78.9% listed an established date (either uniform or non-uniform) as their highest preference. Only 15.7% of students reported no preference as their 1st or 2nd preference. Rolling basis interviews were not popular with 59.5% of students placing this as their 3rd or 4th choice.

Conclusion: Applicants tend to schedule more interviews than their EM advisor recommends. In addition, over 30% doubled booked interviews for the same day and AOA applicants were more likely to do so. Finally, rather than a universal date or rolling date, applicants preferred to know the explicit timeline of the interview offers.

Figure.

2 Impact of Doximity Residency Rankings on Emergency Medicine Applicant Rank Lists

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Columbus, OH; University of Washington, Seattle, WA; Emory University, Atlanta, GA

Background: Influences on applicant rank lists have been well studied; however, the advent of the new Doximity ranking system may have introduced new considerations. Studies have shown that applicants base their decisions on a combination of personal factors including geographic location and quality of life, as well as program-specific factors including expected clinical experience, curriculum quality, interview day, experience with residents and faculty, and reputation of program. This process leads to an important decision that will impact the applicant's future practice and location.

Objectives: This study investigates the impact of the Doximity rankings on the rank list choices made by residency applicants in Emergency Medicine.

Methods: An 11-item survey was sent by email to all students who applied to Emergency Medicine residency programs at four different institutions representing diverse geographical regions (1641applicants). Students were asked questions about their perception of Doximity rankings and how it may have impacted their rank list decisions. Respondents were also asked what factors affected their choice of programs.

Results: This study found that a majority of medical students applying to residency in Emergency Medicine were aware of the Doximity rankings prior to submitting rank lists (67%, 531/793). One-quarter of these applicants changed the number of programs and ranks of those programs when completing their rank list based on the Doximity rankings (26%). Though the absolute number of programs added/dropped, or increased/decreased on the rankings was small, the fact that there is a change in some students' behavior demonstrates that the EM Doximity rankings may impact applicant decision-making in ranking residency programs. The most common reasons for choosing a residency program were geographic location (90%), interview experience (82%), and personal experience with residents (77%).

Conclusion: Doximity provides a rank list of Emergency Medicine residency programs that has some impact on applicant behavior. Future efforts to identify, collect, and disseminate useful meaningful data in an easily navigable and internet-searchable form could provide a set of metrics to evaluate and characterize programs in a transparent way independent of a ranking system.

3 Upstream from the Emergency Department: An Integrative Case for First-Year Medical Students

Caretta-Weyer H, Bagwell S, Westergaard M, Hess J, Seibert C /University of Wisconsin Hospital and Clinics, Madison, WI

Background: Numerous upstream factors help determine a patient's health. These determinants of health often influence patients' presentations to the emergency department (ED), making it vitally important to understand them when caring for these patients. Additionally, because the ED provides a unique window into the health of a robust cross-section of the community, it is an ideal setting to observe a broad sample of factors that contribute to that community's well-being. There is no documentation in the current literature of medical schools providing formal training regarding these upstream determinants of health to first-year medical students within the ED setting.

Educational Objectives:

1. Identify the determinants of health that may be affecting the well-being of a patient
2. Describe how community organizations and health care systems collaborate through policies and programs to modify upstream factors and improve health outcomes of individuals and populations
3. Explore physicians' roles in modifying determinants of health

Curricular Design: In order to identify the upstream determinants of health that may have contributed to a patient's presentation to the ED, all first-year medical students rotated in pairs through the ED for two hours at a time during the first month of medical school. These students conducted interviews with ED patients regarding their home life, diet, literacy, exercise, substance use, exercise, interpersonal violence, and support systems. These interviews served as a foundation for structured reflections and group discussion prior to the students meeting with community agencies who address these upstream factors. Finally, the students debriefed in small groups regarding their experiences.

Impact/Effectiveness: A total of 175 first-year medical students participated in the curriculum. Students were asked to rate the value of their experience on a validated 5-point Likert scale survey. The students' response was overwhelmingly positive with an average score of 4.72. They were also asked to rate their understanding of the intersection between public health and clinical medicine and responded with an average score of 4.13. We plan to explore how this curriculum has changed students' approach to these determinants through an objective structured clinical examination (OSCE) in the future.

4 What's Your Biggest Worry?: A Practical Exercise to Encourage Patient-Centered Care

Dorsett M, Oberle A/Washiington University, St. Louis, MO

Background: As the harms of medical overuse are increasingly recognized, there is a growing movement to focus on patient-centered care that is effective, affordable, needed and wanted. Effective patient-centered communication

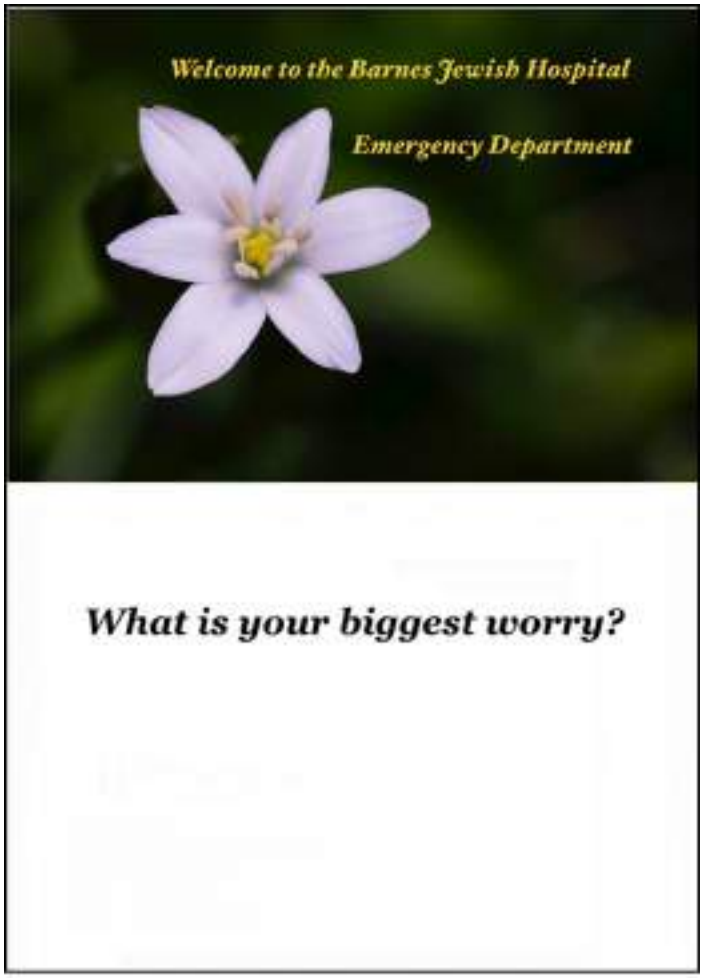


Figure 1. Front and inside cover of card.

is the most fundamental component of patient-centered care. Although challenging in the fast-paced environment of emergency medicine (EM), the importance of such communication skills is reflected in their inclusion among the twenty-three milestones for EM. Despite their relevance, residents receive comparatively little formal training in the principles of patient-centered care.

Educational Objectives: We sought to illustrate to residents how a patient-centered approach might transform the physician-patient interaction.

Curricular Design: During the Lown Institute National RightCare Action Week (10/19 - 10/24/2015), patients presenting to the emergency department at Barnes Jewish Hospital received notecards asking them "What is your biggest worry?" They were asked to share completed cards with their medical team. Residents were instructed to reflect on whether patient answers changed the patient-physician relationship or scope of diagnostic workup pursued. Residents recorded these reflections via an electronic survey. The notecards and reflections were then reviewed and discussed as a group during resident conference the following week.

Impact/Effectiveness: 200 notecards were handed out to patients and 54 were returned. Patient answers could be

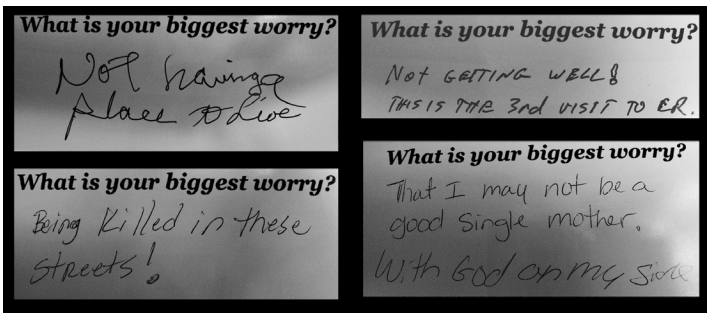


Figure 2. Example patient responses.

classified into broad categories. Some focused on medical concerns, wait times, or lack of confidence in the medical establishment. A large subset focused on social concerns, including lack of place to live, safety, social supports or insurance. Resident reflections centered on the impact of the responses on their patient perception and subsequent clinical management. Examples included a patient who frequently presented with chronic pain who feared that if her symptoms improved she would be displaced from her nursing facility. In another, a woman sent to get a CT-PA by her primary physician for palpitations was in fact incredibly anxious about caring for her husband after a large stroke. In a post-conference survey 47% residents agreed and 50% strongly agreed that patient responses to the worry questioned broadened their understanding of the patient perspective.

Curricular Innovations Oral Presentations

1 A Checklist for Assessment of Entrustment for EPA-10

Thompson L, Lipps J, Leung C, Green B, Schaffernocker T/The Ohio State University College of Medicine, Columbus, OH

Background: AAMC has proposed 13 Core Entrustable Professional Activities (EPAs) for evaluation of medical students. In our clerkship, we assess EPA-10, the ability to evaluate and manage an urgent or emergent patient, using high-fidelity simulation. Currently, there is no tool for assessment of EPA-10.

Educational Objectives: To design an instrument for assessment of EPA 10 using several clinical cases and study the preliminary observations of student behaviors and evidence of the instrument's validity.

Curricular Design: Using the EPA Curriculum Developer's Guide, a set of 3 universal critical actions were processed by a group of 4 content experts: recognizing unstable vital signs, asking for help, and appropriate disposition. Clinical cases were created to observe these critical actions: unstable atrial fibrillation, urosepsis, subarachnoid hemorrhage, ruptured

ectopic pregnancy and tension pneumothorax.

For each case, 2-4 additional case-specific critical actions were determined to be relevant and learner appropriate. An overall entrustment item was added to determine the relationship between discrete behaviors and entrustment.

Impact/Effectiveness: Overall, students (n=103) met criteria for universal critical actions, recognizing unstable vital signs (97%), asking for help (93%), and appropriate disposition (92%). For case specific critical actions, the lowest scores were seen in attempting medical management of atrial fibrillation prior to decompensation (59%), and placing a central line in a patient with urosepsis and hypotension (88%). Raters reached a judgment of entrustment for 86% of students at the end of each case. Between rotations, there was little variability, and less than 17% of students in any cohort were determined not to have attained ad-hoc entrustment.

We designed a method of evaluation for EPA 10 that includes common critical actions, case-specific critical actions, and overall ad-hoc entrustment. The preliminary evidence suggests content validity and consistency across student cohorts. Further studies will determine predictive validity, inter-rater reliability and generalizability across institutions.

2 EMRA Match v4.0: An Alternative to Doximity's Residency Navigator

Jarou Z, Ochsenbein S, Franzen D, Fairbrother H, Kellogg A /Denver Health Medical Center, Denver, CO; East Tennessee State University, Johnson City, TN; University of Washington, Seattle, WA; New York University, New York, NY; Baystate Medical Center, Springfield, MA

Background: Applying to residency is simultaneously one of the most exciting yet daunting tasks a medical student must undertake. In 2003, the Emergency Medicine Residents' Association (EMRA) collaborated with the Council of Emergency Medicine Residency Directors (CORD) to create EMRA Match, one of the earliest EM residency catalogues. Most academic emergency medicine faculty advise students that there is no single "best program" and that students should instead find the program that is the "best fit" for them. In 2014, Doximity launched a Residency Navigator tool providing a ranked list of EM residency programs by "reputation," much to the unanimous concern of every major professional EM organization. As of 2015, EMRA Match is in its third iteration, a streamlined Google-maps based listing of all residency programs and 11 fellowship types, which has received more than 82,000 page views over the past year.

Educational Objectives: To provide students with metric-driven program characteristics to better inform individualized decision making regarding EM residency selection. Several members of CORD's Student Advisement Taskforce representing CORD, CDEM, and EMRA recently formed a workgroup to develop an alternative to Doximity's Residency Navigator, building upon the already successful EMRA Match product.

Curricular Design: EMRA Match v4.0 will be launched prior to the 2017 match cycle. The new interface features a map-view that clusters together programs in high-density areas so that users can automatically zoom to the appropriate geographic level to learn more about the programs in a particular city or region. Students have been surveyed to determine which program characteristics they find most important when selecting a residency program. Additionally, program directors have been surveyed to determine which program characteristics they are willing to share. Applicants will have the option to apply filters to narrow their program selection. EMRA members will also be able to log-in to create a list of favorite programs, add additional notes about each program, and export their list to a spreadsheet if desired.

Impact/Effectiveness: EMRA Match v4.0 is an interactive, collaborative, filterable residency catalogue designed to enable students to more easily find the residency program that fits their specific needs.

Figure 1. Example "map-view" interface of EM residency programs.

Figure 2.

3 Teaching Handovers to Medical Students in the ED: Addressing Entrustable Professional Activity (EPA) #8

Sarsfield M, Schenker K, Welch K, Ko P/SUNY Upstate Medical University, Syracuse, NY

Background: Patient handovers are a critical part of the emergency medicine physician's clinical practice. Effective handovers relay critical patient information and ensure patient safety. The AAMC EPA #8 highlights the importance this principle in medical education. However, there are very few programs designed to address this important goal.

Educational Objectives: To assess the medical students' view of the current curriculum and to evaluate the utility of an educational curriculum addressing patient handover in the ED.

Curricular Design: At the beginning of each 4th year EM elective, students where asked to complete a survey to assess their familiarity and previous education on handovers. Students were then instructed to carry out supervised student to student handovers in the ED at beginning and end of shift throughout the rotation. Observations by residents/faculty were recorded utilizing a standardized checklist with specific domains based on EPA 8 guidelines. At mid rotation, students were given a 1 hour didactic session on handover barriers/models including IPASS, and students practiced handover of simulated patients. At the end of the rotation, students filled out a second survey. 35 students participated in the curriculum from April to October of 2015.

Impact/Effectiveness: A 5-point Likert scale was used to assess each student's familiarity with handovers. On pre-didactic surveys, 25% of the students reported they had no familiarity. 31% of these students felt comfortable doing a handover. 8% of these students reported prior handover experience. 34% of the students had no familiarity with IPASS. Post didactic session, 96% reported that they have a least a strong familiarity with the handover process (scoring 4 or 5). Of these, 80% practiced a handover at least 3 times. 85% of the students felt comfortable doing a handover after the training. Post didactic session, 65% of the students agreed or strongly agreed that they received beneficial feedback and felt more comfortable with the handover process in the ED setting. Improvement was noted on feedback forms. This simple education program suggests that focused didactics, opportunities to practice this skill under direct observation, and feedback by faculty is important in the entrustment development.

Educational Soundbites Oral Presentations

1 Incorporation of First-Person Video to Improve the Assessment of Procedural Skills

Toohey S, Wiechmann W, Youm J/University of California, Irvine, Irvine, CA

Background: The ACGME has developed a set of milestones with clearly defined criteria for assessment and feedback for each residency program. However, the milestones are designed to provide a more global assessment and may lack the granularity to be a useful feedback tool for learners. Evaluation of procedural skill often involves direct observation by a supervising physician. Evaluators are required to prepare summative judgments of the competency of the learner and then provide constructive feedback. However, direct observation can be influenced by many factors including the success or failure of the procedure, the degree of difficulty, the degree of attentiveness of the evaluator and recall bias. In the clinical environment, direct observation can be logistically difficult, subsequently making evaluation and feedback less effective. A recording will mitigate the impact of some of these factors, providing an accurate record for later review.

Educational Objectives: We are seeking to test a novel system for evaluating procedural skills among residents using first-person video (Google Glass).

Curricular Design: This project utilizes Google Glass, to capture a first-person recording of the procedure to address deficiencies with direct observation. After the recording the video will be reviewed by resident and evaluator. We aim to develop a comprehensive system that includes self-assessment, detailed feedback, and evaluation of the evaluator. The primary outcome measures will be the assessment of procedural competency for vascular access and the identification of errors, critical actions, and confounding variables that occurred during the procedure. Secondary outcome measures include the effectiveness and utility of first-person video recording for assessment. Procedural competency will be assessed using a validated checklist and the ACGME Milestones assessment tool. In addition, during the video review the evaluator will identify and note any technical or non-technical errors in an open-ended comment box, noting the time at which it occurred for future review.

Impact/Effectiveness: The expectations of the ACGME in regards to evaluation is increasing, and ensuring the procedural competence of residents is essential. If effective, first person video evaluation could aid in creating a more accurate assessment of resident skills and more accurate and useful feedback for the resident.

2 Innovative Curriculum for Media Interactions

Hicks M, Aurora G, Hicks C, Robinett D/University of Alabama at Birmingham, Birmingham, AL

Background: Mass media has a crucial role in influencing healthy behaviors and notifying the public about health concerns. It is important that physicians maintain the public trust by providing accurate, credible, and unbiased information. When interactions with the media are not carefully thought out, there can often be negative repercussions on a personal and institutional level. The purpose of the media workshop was to prepare residents to tactfully handle delicate situations that involve print and digital media. This course is important because it assisted residents in the development of critical thinking skills, effective communication, and providing health information concisely.

Educational Objectives: This curriculum was designed to successfully teach residents to communicate successfully when interacting with the media. It also allowed residents to develop their critical thinking skills. Our expectation was to develop a sincere dialog between residents and faculty that will assist them when interacting with the media in the future.

Curricular Design: A senior staff writer whose focus is medicine related news provided a lecture of information about how to prepare for and properly approach television and print interviews. Impromptu mock interviews were given to residents related to current health issues. These were recorded and reviewed by the remainder of the participants to provide immediate feedback. Anonymous pre and post workshop evaluations were provided consisting of questions in which participants responded on a five point Likert scale. Sixteen evaluations were completed. Respondents agreed that media conversations with physicians greatly impact audience's opinions (4.1); however most had no prior experience with media personnel (1.4) nor had they attended a similar workshop in the past (1.1). Results of the post-workshop evaluation revealed that participants felt more confident about talking in front of the camera (4.4) and the workshop was a good way of learning about the importance of media relations (4.4).

Impact/Effectiveness: The participants demonstrated increased comfort and knowledge in communicating with media and providing concise information to the public. This will ultimately contribute to further development of team management skills assessed by EM milestone twenty-three.

3 Mass Casualty Simulation for EM Residents

Belden C, Patel C, Lopez R/Southern Illinois University, Chicago, IL

Background: While mass casualty preparedness and knowledge has moved to the forefront of medicine in recent years, training for these incidences in EM residencies has remained minimal. An understanding of triage systems in a mass casualty incident is vital in managing the influx of critical patients during these events. Few examples of triage

Figure 1.

simulation have been published; none involve EM residents. (1;2) Prior curriculum in our program involved lectures without hands- on experience. We believe that mass casualty triage should be treated as a procedural skill that would benefit from simulation experience.

1 Nilsson A, Aslund K, Lampi M et al. Improved and sustained triage skills in firemen after a short training intervention. Scand J Trauma Resusc Emerg Med. 2015 Oct 20;23(1):81.

2 Claudius I, Kaji A, Santillanes G et al. Comparison of Computerized Patients versus Live Moulaged Actors for a Mass-casualty Drill. Prehosp Disaster Med. 2015 Oct;30(5) 438-42

Educational Objectives: Our objective was to simulate a mass casualty incident to allow our EM residents and medical students to gain experience and familiarity with triage using the START protocol. Additionally we aimed to simulate team dynamics by introducing the element of increased patient volume and a larger geographic area of involvement, as would be likely encountered in a true mass casualty situation. Through this simulation, our residents were responsible for locating patients and assigning them a category per the START protocol

Curricular Design: One hundred "patients" were scattered in a large wooded area. Each patient consisted of a small plastic figurine with a set of vital signs, cursory physical exam findings and assessment of mental status. Participants were given an answer key with the options of black, red, yellow and green. They were given 20 minutes to locate all patients and triage them appropriately. Several weeks later the residents and medical students participated in a joint lecture with EMS providers that focused on mass casualty triage.

Impact/Effectiveness: The simulation used was a high fidelity experience due to exposure to patient volume and geographic distribution while at the same time being efficient to produce and run. This simulation increased our residents' familiarity with mass triage as evidenced by a 20% increase in accurate triaging when asked to re-triage patients 6 months

later. We believe this simulation can provide lasting working knowledge and comfort with mass casualty triage and can be easily reproduced on a regular basis, making it a useful addition to an emergency residency mass casualty curriculum.

Figure 2.

4 Skill Retention After Completion of a Proficiency-Based Curriculum to Teach Cricothyroidotomy

Grangeia L, Streich H, Stone J, Talman E, Sudhir A/Albert Einstein Medical Center Philadelphia, Philadelphia, PA; University of Virginia Medical Center, Charlottesville, VA

Background: When designing a curriculum for teaching procedures in an emergency medicine (EM) residency, it is important to provide adequate learning opportunities for residents to become proficient in highly important but rarely performed procedures. Prior methods using a proficiency-based training (PBT) curriculum have evaluated knowledge retention of surgical skills among medical students and surgical residents. Determination of the optimal interval for retraining of rarely performed skills among EM residents is not clearly defined.

Educational Objectives: This project is designed to use a PBT curriculum to teach cricothyroidotomy. Further, it is designed to determine the time interval that competence in this procedural skill is retained after a single PBT session. This method of teaching was chosen as it has previously been demonstrated to be effective in teaching and retention of more common skills, and is easily replicated in most EM training programs.

Curricular Design: Residents were asked to perform a cricothyroidotomy on a model. Each participant then underwent a teaching session in which he/she watched a video of a cricothyroidotomy and the proctor performed the procedure on a model explaining each of 12 critical actions. The resident performed the procedure in front of the proctor with direct feedback provided. The resident was asked to practice the procedure until he/she performed two procedures in a row fulfilling all critical actions. He/she then performed the procedure in front of the proctor who decided if all critical actions were met and completed in less than 45 seconds. If the participant did not, he/she was allowed to practice and retest until all actions were completed in less than 45 seconds.

Impact/Effectiveness: This project contributes to the advancement of knowledge in effective curricular design for procedural education in EM residencies. Each participant's confidence level, number of critical actions completed and time to completion was recorded prior to the teaching session. Half the participants retested at 6 months and half will retest at 12 months. Among the 6 month participants, the confidence level increased from an average of 3.7 to 5.7/10. The average number of critical actions performed increased from 7.7 to 8.6/12. After a single demonstration of the correct procedure and one chance to retest, the number of critical actions performed increased to 11.5/12.

Lightning Oral Presentations

1 Do Emergency Medicine Residency Graduates Feel Prepared To Manage Closed Fractures After Training?

Pittman M, Lall M, Wills C, Yarris L, Ufberg J, Hegarty C, Smith J, Love J/Georgetown University Hospital/Washington Hospital Center, Washington, DC; Emory University School of Medicine, Atlanta, GA; Highland Hospital Emergency Medicine Residency, Berkeley, CA; OHSU Department of Emergency Medicine, Portland, OR; Lewis Katz School of Medicine at Temple University, Philadelphia, PA; University of Minnesota Department of Emergency Medicine, Minneapolis, MN; Rhode Island Hospital, The Miriam Hospital, Providence, RI; Georgetown University Hospital/Washington Hospital Center, Washington, DC

Background: Fractures comprise 3% of all Emergency Department visits. Although Emergency Physicians may be responsible for managing most of the initial care of these patients, many report lack of proficiency and comfort with these skills.

Objectives: Our primary outcome was to assess how prepared recent EM residency graduates felt managing closed fractures. Secondary objectives identified whether residency training or independent practice contributed most to the current level of comfort with these procedures, and which fractures were most commonly reduced without orthopedic consultation.

Methods: This study was deemed exempt by the primary site IRB. An online survey was sent to graduates from 7 EM residency programs over a three month period. The anonymous survey was created through an iterative process, with a literature search and expert review informing item selection to optimize content validity, and piloted on 39 representative sample subjects to assess clarity and ensure response process validity. Each site PI invited graduates from 2010 to 2014 to participate and followed a set schedule of reminders.

Results: The response rate was 74.7%, and included 3-year (69%) and 4-year (31%) programs. Practice in community, academic and hybrid settings were reported by 52.3%, 22.3%, and 25.4% respectively. It was indicated by 47.7% that they reduce closed fractures without a bedside orthopedic consult greater than 75% of the time. The majority of graduates felt somewhat prepared (43.9%) or fairly well prepared (30.7%) upon residency graduation. Post-residency independent practice contributed most to the current level of comfort for 54.4%. The most common fractures requiring reduction were wrist/distal radius and/or ulna, next finger/hand, and finally, ankle/distal tibia and/or fibula.

Conclusion: Although most recent graduates feel at least "somewhat" prepared to manage closed fractures in the ED, most felt independent practice was a greater contributor to their current level of comfort than residency training. Recent graduates indicate fracture reduction without orthopedic consultation is common in today's clinical practice. This survey identifies common fractures requiring reduction that EM residencies should utilize as a focus for training and inclusion in an orthopedic curriculum to better prepare their residents for independent clinical practice.

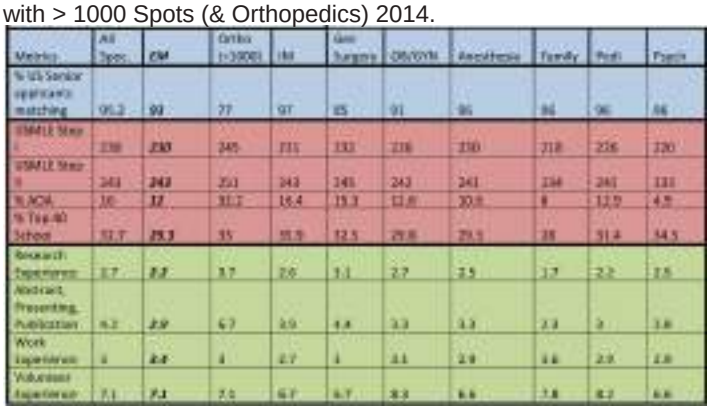
2 Competitiveness of Emergency Medicine as a Specialty

Pasirstein M, Rimple D, Pelletier-Bui A, Van Meter M/ Drexel University College of Medicine, Philadelphia, PA; University of New Mexico, Albuquerque, NM; Cooper Medical School of Rowan University, Camden, NJ; The University of Texas Health Science Center at Houston, Houston, TX

Background: Students interested in matching in Emergency Medicine are applying to more programs than ever before. The average student in 2006 applied to 25 programs. In 2015, that number increased to 41.4. (1) The perception that the field of Emergency Medicine is becoming more competitive may play a role in this upswing in applications.

Objectives: To compare competitiveness of EM to other large (>1000 spots) specialties.

Table 1. A Comparison of Matched US Seniors* Across Specialties with > 1000 Spots (& Orthopedics) 2014.



*US Seniors are defined by the NRMP as graduating 4th year medical students from Allopathic schools.

Methods: To better gauge EM's competitiveness, we used data from NRMP's "Charting Outcomes in the Match: Characteristics of Applicants Who Matched to Their Preferred Specialty in the 2014 Match" to compare EM with other large specialties. Orthopedics was added to this comparison to give an example of a highly competitive specialty. Included in this comparison are the following characteristics: Percentage of US Seniors who applied who match with that specialty, USMLE Step 1 and 2 scores, % of students who are AOA, % of students from a top 40 school, numbers of research experiences, publications, work experiences and volunteer experiences. Characteristics of residency programs included the total percentage of specialty spots that were filled, the percentage of specialty spots filled by US Seniors, and the numbers of ranks needed per spot to fill. (2)

Results: See Table 1 and Table 2

Conclusion: While we have seen increased competitiveness of applicants applying to EM programs, so have other specialties. EM is actually "average" on metrics of matched US seniors when compared to other specialties. When compared to a widely recognized "very competitive" specialty such as Orthopedic Surgery, EM has significantly lower metrics for academic and extracurricular performance. When evaluating metrics of residency programs, EM may be considered more competitive than all of the larger specialties except for General Surgery and OB/GYN; both need to rank fewer applicants to fill each training spot and do so with similar percentages of US Seniors when compared to EM suggesting that they might have a competitive advantage.

1 Historical Specialty Specific Data (EM) AAMC ERAS 2015-10

2 Charting Outcomes in the Match: Characteristics of Applicants Who Matched to Their Preferred Specialty in the 2014 Main Residency Matching Program (NRMP) Aug 2014.

Table 2. A Comparison of Residency Programs Across Specialties with > 1000 Spots (& Orthopedics) 2014.

Metrics	EM	Ortho (>1000)	IM	Gen Surgery	OB/GYN	Anesthesia	Family	Ped	Psych
Total % of specialty spots filled	88.2	99.7	99.1	99.4	99.4	97.6	95.8	89.5	87.7
% of specialty spots filled by US Seniors	77.7	95.4	46.5	78.5	78.5	71.9	45	68.9	51.8
# of ranks needed per spot to fill	6.8	3.4	6.5	5.3	4.9	7.0	5.6	6.9	6.9

3 Residency Applicants Prefer an Online System For Scheduling Interviews

Hern H, Wills C, Alter H, Bowman S, Burns B, Evans T, Schnieder J, Yarris L /Alameda Health System - Highland Hospital, Berkeley, CA; Cook County Hospital, Chicago, IL; University of Oklahoma, Norman, OK; Virginia Commonwealth University, Richmond, VA; Boston University, Boston, MA; Oregon Health Sciences Univeristy, Portland, OR

Background: With increasing numbers of applicants, residency coordinators may be overwhelmed when scheduling residency interviews and applicants often have difficulty coordinating interviews with multiple programs. An online scheduling system might improve the scheduling process.

Objectives: The authors sought to determine applicant mean time to schedule interviews and satisfaction using online scheduling, as compared with manual scheduling.

Methods: An electronic survey to US graduates applying to Emergency Medicine (EM) programs who applied to any of 6 EM programs in the 2014-2015 application cycle. Of the participant programs, 3 used an online system and 3 did not. Applicants were asked to report estimated time to schedule with the online system compared to their average time using other methods. They were also asked to rate their satisfaction with the scheduling process.

Results: Of 1720 applicants to at least 1 of the 6 programs, 856 completed the survey (49.8%). Respondents reported spending less time scheduling interviews using the online system as compared with other systems (median of 5 minutes (IQR 3-10) vs. 60 minutes (IQR 15-240), $p<0.0001$). In addition, applicants preferred using the online system (93.6% vs 1.4%, $p<0.0001$.) Applicants were also more satisfied with the ease of scheduling their interviews using the online system (91.5% vs 11%, $p=0.000$) and felt that the online system aided them coordinating travel arrangements (74.7% vs 41.5%, $p<0.01$.)

Conclusion: An online interview scheduling system is associated with time savings for applicants as well as higher satisfaction among applicants both in ease of scheduling and coordinating travel arrangements. The study is likely generalizable to other medical and surgical specialties.

4 Does Mastery of Cardiac Arrest Management Skills Transfer From A Task Training Environment To A Dynamic High Fidelity Simulated Environment?

Reed T, McHugh M, Hoyt A, Quinones D, Adams W/ Loyola University Chicago, Stritch School of Medicine, Maywood, IL

Background: Previously we demonstrated that students can learn and retain mastery level performance of individual cardiac arrest skills (code leader, CL; defibrillator management, DM; chest compressions, CC; bag valve mask ventilation, BVM) in isolation.

Objectives: Assess whether mastery of cardiac arrest management skills learned in single skill environment can transfer to a dynamic high fidelity simulated environment.

Methods: The Emergency Medicine Clerkship (EMC) faculty created checklists designed to test mastery of 4 cardiac arrest skills (CL, DM, CC, BVM). The minimum passing standard (MPS) on each checklist was established by a team of 7 attending emergency physicians using the Anghoff and Hofstee methods. Senior medical students (n=124) were all trained to meet or exceed the MPS with methods previously test. Three hours after skill training students each participated in 4 high fidelity simulated cardiac arrest scenarios testing the 4 previously mastered skills. Performance was recorded based on the original skills checklist.

Results: Students were able to transfer CL and DM skills to the dynamic environment with no significant decline in ability to meet MPS (see table, all $p>0.05$). In the dynamic environment, only 82% of students met MPS for BVM and 93% met MPS for CC showing a statistically significant decline in performance (see table, all $p<0.05$). The most commonly missed item for CC was depth of chest compressions. The most commonly missed items for BVM were head tilt/chin lift and inserting the oropharyngeal airway.

Conclusion: Although some cardiac arrest skills learned in isolation can transfer to a dynamic code environment, this is not the case for all skills. We conclude that students not only need to be trained to mastery in the skill in isolation but also in the environment, especially when the environment will be dynamic and high pressure such as a cardiac arrest.

Table. Change in MPS from pre-test to post-test.

Team Role	Rhythm	N	Above MPS Pre-Test Below MPS Post-Test	Above MPS Pre-Test Above MPS Post-Test	Exact p
Leader	PEA/Asystole	69	3 (4.35%)	66 (96%)	.25
Leader	VTach/Vfib	69	1 (1.45%)	68 (99%)	.99
DeFib	PEA/Asystole	68	0	68 (100%)	--
DeFib	VTach/Vfib	68	2 (2.94%)	66 (97%)	.50
Chest	All	122	9 (7.38%)	113 (93%)	.004
BVM	All	124	22 (18%)	102 (82%)	<.001

5 Predicting Initial ABEM Board Passage Rates Using USMLE Scores

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Background: The ACGME mandated emergency medicine residency programs demonstrate an 80% first-time passage rate on American Board of Emergency Medicine (ABEM) certifying exam. Selection committees and program directors assume that USMLE scores are good predictors of resident outcomes. USMLE scores are associated with residency in-training examination scores, which correlate with certifying exams. USMLE scores are also associated with performance on qualifying examinations in Internal Medicine, Pathology, Orthopedic Surgery, and the American Board of Surgery. However, no studies have examined whether USMLE scores are predictive of ABEM certifying exam passage.

Objectives: Examine if USMLE Step 2 Clinical Knowledge (Step 2) scores can be used to select residents that will pass the ABEM certifying exam on their initial attempt.

Methods: Design is a retrospective cohort study. With IRB approval, the residency program provided the investigators with a de-identified database containing variables used in this study.

Participants were residents who successfully completed training at our Emergency Medicine Residency Program between the years 2002- 2013. Step 2 scores and initial ABEM board results were available for 101 residents.

Analysis. Mean USMLE scores vary across years. Step 2 scores were centered by subtracting the relevant mean score from each resident's exam score. Logistic Regression was used to determine whether Step 2 scores could predict passage on physicians' first attempt at the ABEM (dichotomously coded pass/fail). ROC analysis was used to obtain sensitivity and specificity.

Results: Step 2 scores were a strong predictor of passing (OR 1.06, P<.001). Figure illustrates how the odds of passing almost double with every 10 point increase on the Step 2. Table provides the sensitivity and specificity at various Step 2 cut points.

Conclusion: USMLE Step 2 scores are highly predictive of passing the ABEM certifying exam on the first attempt. However, residency programs should take many other factors into consideration when selecting applicants, as the best test takers are not always the best physicians. Future studies should examine the utility of USMLE scores using a multi-institutional approach.

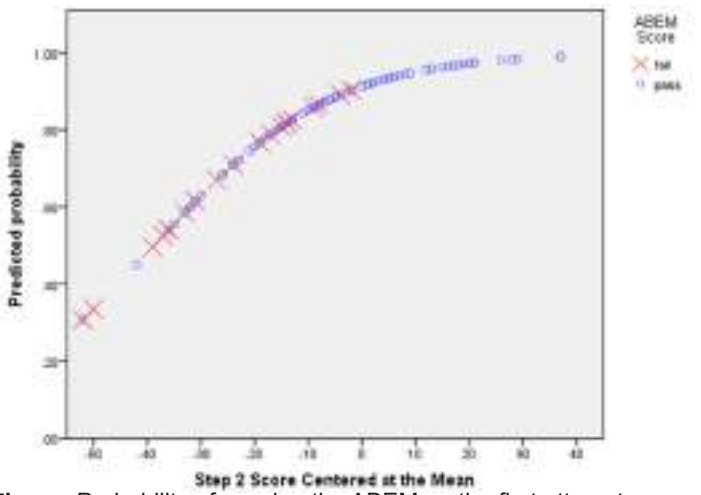

Figure. Probability of passing the ABEM on the first attempt as predicted by how many points away from the mean a person scores on teh USMLE Step 2 CK exam.

Table. Sensitivities and Specificities for predicting ABEM Board Passage on the First Attempt from Step 2 CK scores.

Points from Mean Step 2 CK	Sensitivity	Specificity
-19	0.76	0.52
-18	0.73	0.57
-17	0.72	0.57
-16	0.71	0.62
-15	0.70	0.62
-14	0.66	0.67
-13	0.65	0.76
-12	0.61	0.81
-11	0.61	0.81
-10	0.60	0.81
-9	0.57	0.81
-8	0.55	0.86
-7	0.52	0.90
-6	0.50	0.90
-5	0.45	0.90
-4	0.43	0.90
-3	0.42	0.95
-2	0.41	0.95
-1	0.42	0.95
0	0.39	1.00
1	0.38	1.00
2	0.35	1.00
3	0.32	1.00
4	0.30	1.00
5	0.28	1.00
6	0.26	1.00
7	0.23	1.00
8	0.22	1.00
9	0.21	1.00
10	0.21	1.00
11	0.21	1.00
12	0.20	1.00
13	0.18	1.00
14	0.16	1.00
15	0.16	1.00
16	0.15	1.00
17	0.13	1.00
18	0.12	1.00

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The CPC presentation is a teaching tool that illustrates the logical, measured consideration of a differential diagnosis used to evaluate patients in the emergency department. Cases for presentation must be relevant to emergency medicine practice, solvable and discussible. Critical to this educational format's success is an effective presentation by both the case presenter and the case discussant. Cases are discussed using logical consideration of their salient features and measured consideration of the suggested differential diagnosis. Given the variety of cases seen in a typical Emergency Department, the spectrum of potential CPC cases is broad. Cases that are unusual presentations of common diagnoses or typical presentations of unusual diagnoses make the best cases for CPC. Cases should have several elements in common: "relevance", "solvability", and "discuss-ability". More information about the competition is available at the CORD website at www.cordem.org/cpc.

CORD EM

All EM residency programs are invited to submit a case. Each residency program may submit only one case. Categorical programs and combined programs are separate programs. Therefore, a case may be submitted by a combined EM/Peds or EM/IM program, and another case may be submitted by the categorical program from the same institution. However, two cases from the same program at the same institution may not be submitted.

EMRA

The online submission form will open on September 23, 2016 is available on the CORD website at www.cordem.org/cpc.

Questions should be directed to the CORD Office, cord@cordem.org.

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