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

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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 .509) and had poor inter-rater reliability (intra-class correlation, ICC, .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 .923) with an acceptable inter-rater reliability (ICC .617). Validity evidence was strong for both forms.

Conclusions: 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

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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.

Conclusions: 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
Aline	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.

Conclusions: 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 tadalafil 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 tadalafil). 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).

Conclusions: 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