34 An Analysis of Resident Generated On-Shift Evidence Based Medicine Questions

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Learning Objective: Using previously validated methodology, to analyze the EBM content of clinical questions generated by EM residents while on shift.

Background: Evidence Based Medicine (EBM) skills allow EM physicians to obtain new information while on shift. There is little documentation EM resident clinical questioning skills.

Objective: Using previously validated methodology, to analyze the EBM content of clinical questions generated by EM residents while on shift.

Methods: With IRB approval, residents (PGY 1-4) were required to submit logs of on-shift EBM activity in the program's procedure software system New InnovationsTM. The logs are a convenience sample, with an N of 3-5 per 28-day EM rotation. The logs include a patient description, clinical question, search strategy, information found, and subsequent application. The questions were analyzed through the lens of Patient-Intervention-Comparison-Outcome (PICO) using a rubric previously described by Ramos et al, BMJ, 2003. Anchor words/phrases were established for each of the PICO elements, with exemplars in Table 1. Data was analyzed descriptively.

Results: From 6/2013 until 5/2020, 10,450 discrete completed logs were identified for inclusion. A total of 49 were excluded (45 logs because they were intentionally left blank or only contained a punctuation mark and 4 were exact copies of the previous log) leaving 10,401 for analysis. These were submitted by 143 residents, of which 51 were female (35.7%). Table 2 demonstrates analysis of the questions via the PICO framework using the Fresno rubric. The average score each of the 4 PICO categories for all logs was 1.20. When excluding zero scores the average was 2.33.

Conclusions: In this single site cohort, resident description of P was most detailed, followed by I. C was the most excluded clinical question element. Having more patient oriented O would strengthen that category. When residents include a PICO category in clinical questions, their ability to do so appears strong, so educational interventions to encourage the use of all 4 PICO elements may yield the most improvement.

Table 1. Sample standardized phrases used to score resident on-shift clinical questions as adapted from Ramos et al. (BMJ 2003)

Score	Population	Intervention/Comparison	Outcome
0	No mention	No mention	No mention
1	"Patient" "Population"	"Imaging" "Management" "Tool" or "System" Treatment Exam "Control" of (symptom)	Outcome Effective, Benefit, Utility "Improved" Safety Prognosis "Disposition"
2	Low-risk patient Mention of a disease (i.e. PE)	Specific type of imaging (i.e. CT) Follow-up Medication class (i.e. antibiotics) Type of symptom control	Treatment of (disease) Improvement of (symptom) Control of (entity) Specific disposition (i.e. admit) Side effect/adverse effect Patient satisfaction
3	Disease with a modifier (i.e. acute asthma, COPD exacerbation)	Specific imaging of specific anatomy (i.e. CT head) POCUS, bedside ultrasound Specific test (i.e. EKG, echo, CBC) Specific intervention (i.e. proning, nerve block, suturing)	Morbidity, mortality or another patient-oriented outcome Change in specific disposition Specific effect/adverse effect

Table 2. PICO analysis of EM resident clinical questions using the Fresno Rubric demonstrating average score and score distribution.

	Population (Max 3)	Intervention (Max 3)	Comparison (Max 3)	Outcome (Max 3)	Total Score (Max 12)
Overall	**2.077**	**1.708**	**0.267**	**0.733**	
(10,401 = 100% total)	0 = 2114 1 = 238 2 = 2782 3 = 5267	0 = 2350 1 = 1966 2 = 2452 3 = 3633	0 = 9282 1 = 88 2 = 404 3 = 627	0 = 6512 1 = 1031 2 = 1981 3 = 877	**4.785**
PGY 1	**2.156**	**1.670**	**0.291**	**0.733**	
(2554, 24.6% of total)	0 = 454 1 = 72 2 = 649 3 = 1379	0 = 574 1 = 530 2 = 616 3 = 834	0 = 2250 1 = 25 2 = 118 3 = 161	0 = 1611 1 = 229 2 = 498 3 = 216	**4.850**
PGY 2	**2.085**	**1.707**	**0.275**	**0.735**	
(2552, 24.5% of total)	0 = 495 1 = 58 2 = 733 3 = 1266	0 = 582 1 = 487 2 = 580 3 = 903	0 = 2274 1 = 16 2 = 99 3 = 163	0 = 1569 1 = 298 2 = 478 3 = 207	**4.802**
PGY 3	**2.101**	**1.726**	**0.245**	**0.709**	
(2210, 21.2% of total)	0 = 437 1 = 45 2 = 585 3 = 1143	0 = 500 1 = 394 2 = 528 3 = 788	0 = 1984 1 = 24 2 = 89 3 = 113	0 = 1412 1 = 203 2 = 421 3 = 174	**4.781**
PGY 4	**1.987**	**1.729**	**0.256**	**0.748**	
(3085, 29.7% of total)	0 = 728 1 = 63 2 = 815 3 = 1479	0 = 694 1 = 555 2 = 728 3 = 1108	0 = 2274 1 = 23 2 = 98 3 = 190	0 = 1920 1 = 301 2 = 584 3 = 280	**4.720**
Male	**2.053**	**1.708**	**0.262**	**0.742**	
(6833, 65.7% of total)	0 = 1428 1 = 170 2 = 1844 3 = 3391	0 = 1550 1 = 1287 2 = 1602 3 = 2394	0 = 6117 1 = 50 2 = 258 3 = 408	0 = 4262 1 = 671 2 = 1298 3 = 602	**4.766**
Female	**2.122**	**1.709**	**0.277**	**0.715**	
(3568, 34.3% of total)	0 = 686 1 = 68 2 = 938 3 = 1876	0 = 800 1 = 679 2 = 850 3 = 1239	0 = 3165 1 = 38 2 = 146 3 = 219	0 = 2250 1 = 360 2 = 683 3 = 275	**4.823**