

The Impact of On-Shift Evidence-Based Medicine Activity on Patient Care

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The Impact of On-Shift Evidence-Based Medicine Activity on Patient Care

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Background

Evidence-Based Medicine (EBM) skills allow EM providers to obtain and apply new information while on shift in the Emergency Department (ED). The impact of using EBM on shift to patient care has not previously been described.

Objective

This project seeks to describe how EBM activity by EM residents impacts clinical patient care.

Method

This IRB approved study was conducted by a PGY 1-4 EM residency. Residents are required to complete logs of on-shift EBM activity in the program’s procedure software system New Innovations.™ 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. Using qualitative methodology described by MacQueen (CAM 1998), a codebook was created to analyze resident free text to the prompt: “Based on your research, would you have done anything differently”. The coding framework is shown in Table 1. Results are analyzed descriptively.

Results

From June 2013 to May 2020, 11,145 discrete logs were identified. Of these, 571 were excluded (298 incomplete and 273 duplicate), leaving 10,574 logs for analysis. These logs were completed by 137 residents, of which 46 were female (34%). The 10 most utilized log codes (97.5%) are in Table 1. The remaining 29 codes were 2.5% of the dataset. A total of 1977 (18.7%) logs affirmed that evidence researched will change their future practices. Of those, 392 (3.7%) explicitly stated their research influenced care while the patient was in the ED.

Conclusions

In this single site cohort, residents were able to successfully link EBM activity to individual patients using the program’s procedure recording software. In almost one fifth of this convenience sample, residents described how the activity changed their individual clinical practice of EM, with one in 27 changing patient care in real time. Logging EBM activity appears to generate ACGME outcomes data.

TABLE 1

Qualitative Analysis of Resident Reported Application of EBM to Individual Patients While on Shift

Code	Meaning	Total (%)	PGY 1 (%)	PGY 2 (%)	PGY 3 (%)	PGY 4 (%)
231	The care of this patient was not influenced by what was looked up PLUS the care of future patients may be influenced by what was looked up PLUS the possible change in future care is based on evidence. OR The care of this patient was not influenced by what was looked up but learned something based on evidence that may be applied in the future. OR A clinical question was asked without reference to a patient and some useful information based on evidence was learned for possible future use.	3343 (31.6)	880 (26.3)	877 (26.2)	679 (20.3)	907 (27.1)
331	The care of this patient may have been influenced by what was looked up PLUS the care of future patients may be influenced by what was looked up PLUS the possible change in present and future care is based on evidence. OR Evidence was found, but there was no indication of whether what was looked up influenced the care of this patient or will influence the care of future patients.	2263 (21.4)	450 (19.9)	522 (23.1)	512 (22.6)	779 (34.4)
221	The care of this patient was not influenced by what was looked up PLUS the care of future patients will not be influenced by what was looked up PLUS this decision to not change care was based on evidence. OR What was looked up confirmed what was already being done PLUS the care of future patients will not be influenced by what was looked up PLUS this decision to not change is based on research.	1319 (21.4)	278 (21.1)	311 (23.6)	298 (22.6)	432 (32.8)
211	The care of this patient was not influenced by what was looked up PLUS the care of future patients will be influenced by what was looked up PLUS this future change in care is based on evidence.	1062 (10.0)	348 (32.8)	249 (23.4)	202 (19.0)	263 (24.8)
131	The care of this patient was influenced by what was looked up PLUS the care of future patients may be influenced by what was looked up PLUS this change in care is based on evidence.	1047 (10.0)	246 (23.5)	221 (21.1)	230 (22.0)	350 (33.4)
311	The care of this patient may have been influenced by what was looked up PLUS the care of future patients will be influenced by what was looked up PLUS the change in future care is based on evidence.	443 (4.2)	134 (30.2)	114 (25.7)	82 (18.5)	113 (25.5)
111	The care of this patient was influenced by what was looked up PLUS the care of future patients will be influenced by what was looked up PLUS this change in care is based on evidence.	392 (3.7)	97 (24.7)	92 (23.5)	92 (23.5)	111 (28.3)
431	The care of the present patient was influenced by outside influences (e.g., an attending physician made the decision, treatment was deferred to a specialist, the most efficacious treatment method was not able to be provided) PLUS the care of future patients may be influenced by what was looked up PLUS the possible change in future care is based off of evidence.	265 (2.5)	57 (21.5)	67 (25.3)	59 (22.3)	82 (30.9)
227	The care of this patient was not influenced by what was looked up PLUS the care of future patients will not be influenced by what was looked up PLUS found contradictory evidence. OR The care of this patient was not influenced by what was looked up PLUS the care of future patients will not be influenced by what was looked up PLUS the evidence found was outdated. OR The care of this patient was not influenced by what was looked up PLUS the care of future patients will not be influenced by what was looked up PLUS the evidence found was insufficient/low quality and was not strong enough to change the decision on how to treat the current or future patients.	97 (0.9)	21 (21.6)	22 (22.7)	20 (20.6)	34 (35.1)
411	The care of the present patient was influenced by outside influences (e.g., an attending physician made the decision, treatment was deferred to a specialist, the most efficacious treatment method was not able to be provided) PLUS the care of future patients will be influenced by what was looked up PLUS the change in future care is based off of evidence.	80 (0.8)	23 (28.8)	22 (27.5)	12 (15.0)	23 (28.8)
Other	The aspects of evidence acquisition and application included scenarios not articulated in the above categories.	263 (2.5)	53 (20.2)	68 (25.9)	61 (23.2)	81 (30.8)

TABLE 2

Resident Reported Application of EBM Leading to a Change in Future Patient Care

Code	Count (% of total logs)	Examples	
211	1062 (10.0)	I'm going to stop prescribing cough medication with codeine since the evidence doesn't seem to support its use and we're in the midst of an opioid epidemic. It's over the counter cough medicine all the way. If we're going to use a placebo, that will be my placebo of choice.	In the future, I will give fentanyl if patient does not get relief with, or cannot have, nitroglycerin.
311	443 (4.2)	At the start of my Peds EM month, I was unsure of which to use for acute pain. APAP or ibuprofen. Parents would ask me, and I was unsure. Now I feel more confident in what I want to use for pain relief in the peds population. Ibuprofen is now my go-to for pain relief as long as there are no obvious contraindications. It was what I will tell parents to use at home. I am less inclined to give prescriptions for acetaminophen with codeine.	Based on criteria for severe CAP, I will now use steroids as part of my treatment plan or at least have a conversation with admitting team about adding on steroids. This Cochrane study showed great benefits of steroids with little side effects (hyperglycemia). Now the study only speaks about severe CAP. I would like to see study on non-severe CAP or hospital/vent associated pneumonia which we see commonly as well. I would assume it would help just as much for HCAP.
111	392 (3.7)	We were planning to treat the patient with a fluoroquinolone to cover enteric organisms, but after looking on PEPID we decided to add the recommended IM ro before he was discharged. In the future with this demographic of patient I would use the same regimen.	When I was literally pressed for time in order to help save a man's life, I relied on Lexicomp™ to give me reliable dosing for TPA for thrombolysis of a massive PE. I would not do anything different in the future – Lexicomp™ was quick and reliable.
411	80 (0.8)	It is unacceptable that neurologists in a certified stroke center are going based on outdated guidelines. In retrospect I should have challenged them further to push TPA. In the future I will review literature timelier to advocate the best options for patient.	No benefit of anti-virals. I brought up these articles but was unable to convince the attending. I would not use anti-virals in future cases.
1977 (18.7% of total) of EBM logs indicated evidence acquisition that will influence future patient care.			