

Educating Emergency Medicine Residents in Emergency Department Administration and Operations: Needs and Current Practice

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Abstract

Background Emergency medicine (EM) residents are expected to develop competence in emergency department (ED) administration and operations.

Objectives We assessed current needs and educational practices related to preparing EM residents for their role in ED operations, and explored whether there was an association between program characteristics and the presence of ED operations education in US EM residency programs.

Methods We conducted a cross-sectional needs assessment, using a web-based survey sent to all US EM residency programs to assess program characteristics, provision of ED operations-related lectures, availability of an ED administrative fellowship, and presence of a formal ED operations curriculum. Logistic regression was used to determine if any program characteristics were associated with the presence of lectures and a formal operations curriculum.

Results Of the 158 Accreditation Council for Graduate Medical Education–accredited EM programs, 117 (74%) responded. Of these, 109 (93%) respondents had at least 1 lecture on ED operational topics. Sixty programs (54%) measured resident productivity. Knowledge of Centers for Medicaid & Medicare Services reimbursement guidelines was significantly positively associated with presence of an ED operations curriculum (OR, 3.52, $P = .009$) and with lectures on patient satisfaction (OR, 3.99, $P = .006$). Measuring resident productivity was positively associated with having lectures on productivity (OR, 2.50, $P = .02$) and with ED throughput (OR, 2.32, $P = .03$). No 2 variables were simultaneously significant in the model.

Conclusions Most EM programs had at least 1 lecture on ED operations topics. Roughly half of the programs measured resident productivity and half had a formal ED operations curriculum.

Editor's Note: The online version of this article contains the survey instrument used in the study.

Introduction

Emergency medicine (EM) residency programs should provide training in administrative and operational topics,

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such as emergency department (ED) throughput, financial principles, policies and procedures, ED data acquisition, and operational metrics.¹ Many EDs have some component of productivity-based compensation and track operational metrics; furthermore, the quality reporting program of the Centers for Medicaid & Medicare Services (CMS) includes time-based measures, such as median time for ED length of stay for discharged and admitted patients and time from admit decision time to the time the patient leaves the ED for the inpatient unit.^{2,3} Prior studies have demonstrated that educational interventions can increase clinical productivity, and improved ED efficiency has been linked with better patient satisfaction and may impact revenue.^{2,4}

Little is known about what educational interventions improve productivity or other aspects of administrative and operational competency. To inform educational practice, we surveyed EM residency programs regarding their perceptions of the need for ED operations training, current curricula, and educational sessions addressing this topic. We also assessed whether program characteristics were

associated with ED administrative and operations education. The results may inform subsequent curriculum development efforts in EM and may be useful to other specialties.⁵

Methods

For this cross-sectional needs assessment of EM residency programs accredited by the Accreditation Council for Graduate Medical Education (ACGME), we obtained contact information for all programs from the ACGME website and supplemented this with data from other organizational websites when information was lacking. Program directors, assistant or associate program directors, and residency coordinators were invited to participate, and we requested that only 1 person from each program complete the survey.

Six emergency physicians with expertise in survey design, education, and ED administration developed the survey for this study. To ensure content validity, we performed a literature review. We used survey read-aloud sessions and pilot testing with 10 faculty members with feedback to enhance response process validity.

The survey included multiple-choice items about program characteristics, availability of administrative fellowships, measurement of resident productivity, and knowledge of CMS reimbursement metrics. It also asked about the presence of ED operations-related lectures and use of a formal ED operations curriculum. The survey was fielded using SurveyMonkey (provided as online supplemental material).

Programs were invited to participate in February 2012. Nonrespondents were sent up to 2 reminder e-mails over a 1-month period before data collection was closed. The survey was voluntary, and the data were deidentified to maintain anonymity.

The study was approved by the institution's Institutional Review Board.

Data Analysis

Descriptive statistics summarized program characteristics and distribution of reported ED operations curricular elements by program size (large versus small). A program was considered large if it had > 10 residents per year.

Logistic regressions assessed whether program characteristics were associated with the presence of a formal longitudinal ED operations curriculum or lectures on productivity, patient satisfaction, documentation, and ED throughput.

Univariate analysis determined the association between each outcome and the independent variables. Independent variables with a *P* value < .25 were considered for multivariable logistic regression. A variable was kept in the final model if the *P* value was < .05. A separate model was

built for each outcome. Analyses were conducted using SAS version 9.2 (SAS Institute Inc).

Results

Of 158 residency programs in the ACGME database, 117 (74%) completed the survey. The majority were urban (68% urban, 22% suburban, 5% rural, 5% other), 3-year programs (69% 3 year; 28% 4 year; 1% 5 year; and 2% other), and affiliated with a medical school (95%, 111 of 117).

Of responding programs, 111 (95%) had at least 1 operational lecture, and frequently reported topics included documentation, coding and billing, and patient satisfaction. In addition, 85 programs (73%) reported knowledge of metric-based CMS ED reimbursement guidelines, and 63 (54%) measured resident productivity. Seventeen programs reported having an administrative fellowship. There were no significant differences between large (*n* = 56) and small (*n* = 61) programs (TABLE).

No 2 variables were simultaneously significant in any logistic regression model. In the final model, only knowledge of CMS reimbursement guidelines was positively associated with the presence of a formal operations curriculum (OR, 3.52; 95% CI 1.36–9.08; *P* = .009) and patient satisfaction lectures (OR, 3.99; 95% CI 1.50–10.57; *P* = .006). Only measurement of resident productivity was positively associated with the presence of lectures in productivity (OR, 2.50; 95% CI 1.17–5.37; *P* = .02) and ED throughput (OR, 2.32; 95% CI 1.09–4.94; *P* = .03). No variable was significantly associated with the presence of lectures on documentation.

Discussion

A majority of EM residency programs reported some ED operations-related education, consistent with the findings of previous research.⁶ The likelihood of providing education on these topics did not differ by program size. Our findings add to current knowledge by describing the prevalence of specific curricular content. Chart documentation, coding and billing, and patient satisfaction were commonly taught, but only half of the programs had education on ED crowding.

With CMS's focus on quality, the emphasis on measuring operational metrics will likely increase.⁴ Programs whose delegates reported knowledge of CMS reimbursement guidelines were more likely to report having a formal longitudinal operations curriculum and didactics on patient satisfaction. The implication that faculty knowledge of operations content influences residency curricula may be useful to administrative directors and chairs as they prioritize topics for professional development. Because the productivity

Table	Reported Administrative and Operational Educational Practices: Overall and Stratified by Small Versus Large Programs		
Educational Practice	No. of Programs N = 117 (%)	No. of Small Programs n = 61 (%)	No. of Large Programs n = 56 (%)
Program reports some formal ED operations-related lectures on the following topics:	111 (95)	56 (92)	55 (98)
Lecture on documentation	102 (87)	52 (85)	50 (89)
Lecture on coding and billing	90 (77)	47 (77)	43 (77)
Lecture on patient satisfaction	87 (75)	46 (75)	42 (75)
Lecture on clinical productivity	72 (62)	37 (61)	35 (63)
Lecture on ED throughput	71 (61)	39 (64)	32 (57)
Lecture on ED crowding	60 (51)	31 (51)	29 (52)
Lecture on operational metrics	59 (50)	32 (52)	27 (48)
Lecture on other administrative or operational topic	8 (7)	4 (7)	4 (7)
Presence of administrative fellowship	17 (15)	6 (10)	11 (20)
Presence of formal longitudinal ED operations curriculum	63 (54)	38 (62)	25 (45)
Program delegate familiar with CMS reimbursement guidelines	85 (73)	47 (77)	38 (68)
Program measures resident productivity	63 (54)	32 (55)	31 (52)
Programs providing responses for the following questions:	N = 59 ^a	N = 31 ^a	N = 28 ^a
Measures patients per hour	55 (93)	29 (94)	26 (93)
Measures RVUs per hour	17 (29)	8 (26)	9 (32)
Measures length of stay	16 (27)	9 (29)	7 (25)
Other	4 (7)	3 (10)	1 (4)
How do you use the information of resident productivity?			
Give direct feedback to individual residents	55 (93)	30 (97)	25 (89)
Use as part of an evaluation for individual residents	23 (39)	13 (42)	10 (36)
Use as an educational intervention for residents as a group	19 (32)	13 (42)	6 (21)
Use for research purposes	16 (27)	7 (23)	9 (32)
Other	5 (8)	1 (3)	4 (14)
How important is ED flow/metrics to residency education?	N = 112 ^a	N = 60 ^a	N = 52 ^a
Crucial	8 (7)	3 (5)	5 (10)
Very important	48 (43)	29 (48)	19 (37)
Important	45 (40)	22 (37)	23 (44)
Slightly important	10 (9)	6 (10)	4 (8)
Not important at all	1 (1)	0 (0)	1 (2)

Abbreviations: ED, emergency department; CMS, Centers for Medicaid & Medicare Services; RVUs, relative value units.

^a Number of programs that provided responses.

of the residents may affect overall quality of care, prioritizing faculty development in administrative and operations-related topics may indirectly influence resident competency.

Our results suggest that programs aiming to provide ED operations training might measure resident productivity and implement a hands-on operations rotation and didactics on patient satisfaction, ED throughput, and documentation.

Our study has several limitations. Although the survey defined ED-operations topics, it is possible that respondents may have had different definitions of these terms, which may have affected the results. In addition, survey data are prone to several sources of error. To minimize recall bias, we targeted program delegates who were most likely to be involved in curriculum development. Our response rate of 74% reduces selection and nonresponse bias as sources of error. Finally, a cross-sectional study can measure association between operations characteristics and curricular practices but cannot offer information about causation.

Next research steps should include obtaining further understanding of learner needs by assessing their operations-related competency after transition to independent practice, and developing educational materials to standardize and improve the quality of education in this area. Given growing concerns regarding ED crowding, programs should consider adding education on this topic to enhance their operations-related education.⁷

Conclusion

Most EM residency programs provided some operations-related training, and roughly half had a formal ED

operations curriculum. Our results inform future efforts to better understand the need for operations content in EM residency and could assist in the development of common curricula in this area.

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