

16 Predictors of Success in EM Residency: A Multicenter Study

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Background: Significant time and effort is required to evaluate credentials of applicants applying to emergency medicine (EM) residency programs. Prior research does not offer an evidence-based approach to valuing each credential to predict an applicant's success during and after residency training.

Objectives: To evaluate the association between EM residency applicants' credentials (predictors) and their subsequent performance during and after residency training (outcomes).

Methods: This was a retrospective multi-center sample of all residents in the three most recent graduating classes from 9 participating EM residency programs as a follow-up to a prior study evaluating 4 EM programs. The correlation between predictor and outcome variables was examined using univariate analysis, with $r > 0.2$ considered meaningful.

Results: A total of 286 residents from 9 institutions were evaluated. Of 31 predictors (Table 1) analyzed, 14 showed a meaningful correlation with an outcome variable. Of these, 5 had 3 or more meaningful correlations. Applicants' grade during EM away rotation, USMLE Step 1 and Step 2 CK scores, interview scores, as well as "Global Rating" on the Standard Letter of Recommendation (SLOR) showed the strongest association with outcomes (Table 2). USMLE Step 1 and 2 CK scores most strongly correlated with the outcomes of medical knowledge, in-training scores, and passing the ABEM qualifying exam. EM away rotation grade, SLOR global rating, and interview scores most strongly correlated with resident performance in the core competencies.

Conclusion: EM away rotation grades, USMLE Step 1 and 2 CK scores, SLOR global ratings, and interview score were the strongest predictors of EM residency applicants' success during residency. Future research using a weighted algorithm along with incorporation of the new standard letter of evaluation and New Accreditation System milestones to prospectively evaluate EM residency applicants may be warranted.

Table 1. List of predictors for success in EM residency and categories of successful outcomes.

Predictors	Outcomes
Core Third Year Clerkship Grades	Rank order of Resident Performance using Semi-Annual Evaluations at Midpoint and End of Residency (Stratified by Core Competency)
Home/Away EM Clerkship Grade	Chief Resident
Ratings from Dean's Letter (MSPE)	Remediation during residency
USMLE Step 1&2 Clinical Knowledge Raw Scores	American Board of Emergency Medicine (ABEM) In-training Score in Final Year of Residency
Standard Letter of Recommendation scores components	Successful completion of EM Residency
Interview Score	Passing ABEM Qualifying Exam and Oral Boards on First Attempt
Rank List Tier	Number of Presentations at National Meetings during Residency
Alpha Omega Alpha Membership	Number of Publications during Residency
Gold Humanism Award	Extracurricular Activities During Residency
Other Awards	Job Type Post-Graduation (Community versus Academic versus Fellowship)
Medical School Attended – based on US News and World Report 2013 rating for primary care, research and average	
Degree Earned (DO or MD)	
International versus US Medical Graduate	
Extracurricular Activities	
Prior EM Experience	
Prior Work Experience	
Number of Presentations at National Meetings	
Number of Publications	
Distance from permanent home address to residency program	

Table 2.

Predictor	# Positive Correlations, $r > 0.1$	# Negative Correlations, $r < -0.1$	# Positive Correlations, $r > 0.2$
Surgery Clerkship Grade	12	0	0
Medicine Clerkship Grade	4	1	0
Pediatrics Clerkship Grade	11	0	2
Obstetrics/GYN Clerkship Grade	2	0	0
Family Medicine Clerkship Grade	4	0	0
Psychiatry Clerkship Grade	3	2	0
EM Home Clerkship Grade	5	0	0
EM Away Clerkship Grade	14	3	*6
EM Away 2nd rotation Clerkship Grade	10	1	*6
MSPE – Dean's Letter	1	2	0
USMLE Step 1	6	1	*4
USMLE Step 2 CK	11	1	*4
Rank List tier	16	0	1
Extra activities	6	2	1
Prior Work experience	1	0	0
Prior EM experience	1	0	0
AOA Honors society election	7	0	1
Gold Humanism award recipient	1	0	0
Other awards	7	2	0
International Medical Graduate	3	2	0

Table 2. Continued.

Predictor	# Positive Correlations, $r > 0.1$	# Negative Correlations, $r < -0.1$	# Positive Correlations, $r > 0.2$
DO versus MD	2	1	0
Medical school attended research rank	2	3	0
Medical school attended primary care rank	0	3	0
Medical school attended average rank	1	4	0
Interview Score	14	1	*7
Distance from Home	1	4	0
Number of Presentations	3	1	2
Number of Publications	4	4	2
SLOR work ethic	8	1	0
SLOR global	13	1	*3
SLOR competitiveness	10	0	1