

Objective predictors of intern performance

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Purpose: Residency programs select medical students for interviews and employment using objective metrics including United States Medical Licensing Examination (USMLE) scores, GPA, and class rank. This study investigated whether these metrics are associated with intern performance.

Methods: This single institution, retrospective cohort analysis included 244 graduates from 4 classes (2015-18) who completed an Accreditation Council for Graduating Medical Education (ACGME) certified internship. Program directors (PDs) provided a global assessment rating and ratings on specific items addressing ACGME competencies (response rate = 47%). Evaluation items had 5 response options: excellent = 5, very good = 4, acceptable = 3, marginal = 2, unacceptable = 1. PDs were also asked to classify interns as below average, average, above average, or outstanding relative to the other interns in their cohort (cohort comparison rating). Descriptive statistics based on this cohort comparison rating are shown in Table 1. Mean USMLE scores (Step 1 and Step 2CK), third-year GPA (required clinical clerkships), class rank and core competency ratings were compared using Welch's ANOVA and follow-up pairwise t-tests.

Results: There were no statistically significant differences based on sex, class, or between graduates who were evaluated and those who were not evaluated. Therefore, the data was aggregated for analyses. Group differences based on both the global assessment rating and cohort comparison rating served as primary outcomes. Higher GPA and class rank were associated with better performance as an intern, ($p=0.020$ and $p=0.016$, respectively). Better intern performance was associated with higher USMLE Step 1 ($p=0.006$) and Step 2CK ($p=0.030$) scores (Table 1). Pairwise t-tests demonstrated that interns rated as average had lower scores than those rated above average or outstanding. There were no differences between above average and outstanding interns. Higher rating in each of the core competencies was associated with better performance as an intern ($p<0.01$) and pairwise t-tests demonstrated that interns rated as average had lower competency ratings than those rated above average or outstanding. A chi square test of association between global assessment rating and cohort comparison rating shows a strong relationship between these two measures, $\chi^2(9) = 299.4, p < .0001$. For the 4 interns with an overall rating of below average, 3 received a global assessment rating of marginal.

Conclusions: Better performance as an intern was associated with higher USMLE scores, GPA and class rank. The cohort comparison rating should be a much different rating task. For students matriculating into competitive specialties and/or selective programs, the cohort comparison to other higher-performing peers is a complex relationship and requires further investigation.

Table 1: Medical school performance metrics stratified by program director's overall assessment of intern performance (relative to their cohort) at the end of intern year.

	Below Average n = 4	Average n = 60	Above Average n = 95	Outstanding n = 85	ANOVA		Follow up t-tests for significant ANOVA					
							A vs. AA		A vs. O		AA vs. O	
Program Outcomes	M (SD)	M (SD)	M (SD)	M (SD)	<i>F</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
USMLE Step 1	210.5 (24.0)	224.6 (19.3)	232.4 (18.6)	234.6 (17.4)	5.3	<0.01	2.5	0.01	3.2	<0.01	0.9	0.38
USMLE Step 2CK	241.5 (15.8)	243.4 (16.1)	249.1 (15.9)	250.4 (15.6)	3.6	0.03	2.1	0.04	2.6	<0.01	0.6	0.54
USMLE Step 3	256.0 (N/A)	230.2 (12.8)	230.8 (13.6)	228.9 (14.4)	0.3	0.76						
MS3 GPA	3.24 (0.1)	3.4 (0.4)	3.5 (0.3)	3.6 (0.3)	4.0	0.02	2.4	0.02	3.0	<0.01	0.7	0.48
MS3 Rank	105.8 (11.6)	76.8 (37.5)	63.1 (38.6)	58.5 (38.8)	4.2	0.02	-2.1	0.04	-2.8	<0.01	-0.8	0.41
Evaluation Items												
Global Assessment	2.3 (0.5)	4.0 (0.6)	4.4 (0.5)	5.0 (0.2)	105.7	<0.01	5.4	<0.01	12.5	<0.01	8.1	<0.01
Medical Knowledge	2.0 (0.0)	3.8 (0.6)	4.2 (0.6)	4.8 (0.4)	60.3	<0.01	4.1	<0.01	10.0	<0.01	6.8	<0.01
Patient Care	1.8 (0.5)	3.9 (0.6)	4.3 (0.6)	4.9 (0.3)	82.4	<0.01	5.1	<0.01	11.0	<0.01	6.9	<0.01
Communication Skills	2.3 (0.5)	3.9 (0.8)	4.4 (0.6)	4.9 (0.3)	65.9	<0.01	5.2	<0.01	10.5	<0.01	6.1	<0.01
Professionalism	4.3 (0.5)	4.2 (0.8)	4.6 (0.6)	5.0 (0.2)	35.3	<0.01	4.9	<0.01	8.2	<0.01	3.8	<0.01
Practice-based Learning & Improvement	2.5 (0.5)	3.9 (0.6)	4.2 (0.6)	4.8 (0.4)	67.0	<0.01	3.9	<0.01	10.3	<0.01	7.3	<0.01
Systems-based Practice	2.8 (0.5)	3.8 (0.6)	4.2 (0.6)	4.7 (0.5)	46.5	<0.01	4.2	<0.01	9.2	<0.01	5.7	<0.01
Average Rating	2.6 (0.4)	3.8 (0.5)	4.1 (0.5)	4.7 (0.3)	85.2	<0.01	5.6	<0.01	12.5	<0.01	8.0	<0.01

Descriptive statistics provided for the students evaluated as "below average", but this group is not included in the statistical analyses reported in this table. Evaluation items had 5 response options with these labels/numerical values: Excellent =5, Very Good =4, Acceptable =3, Marginal =2, Unacceptable =1