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110 The Right Stuff: Can Selection Criteria Predict Success in Emergency Medicine

Residency Training?

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Background: The resident selection process involves consideration of multiple criteria to predict which applicants will successfully complete residency and become competent physicians. Many studies have sought to determine which of these criteria predict success, with only limited data in the field of Emergency Medicine (EM).

Objectives: This study sought to identify medical student characteristics that predict success in and completion of an EM residency.

Methods: This was a retrospective review of medical student and resident data from a large academic 3-year EM residency.

Subjects: All EM residents who matched between the years 2004-2013.

Observations: A single reviewer reviewed ERAS applications to extract 19 variables from each application. This same individual interviewed 16 faculty and asked them to assign each resident an overall assessment score – from 1 (best) to 3 (worst) as well as a ranking of each individual from 1 (best) to number of residents in their graduating class (worst). Simple linear regression models were used to determine which variables predicted higher rankings by the faculty. Wilcoxon Rank Sum and Fisher's Exact tests were used to compare residents who did not complete the program.

Results: A total of 152 residents met our study criteria; 25 were excluded due to incomplete data available, leaving a total of 127 subjects. Total application score, Step 2 CK score, AOA status, outstanding Dean's letter and medicine clerkship grade were significant ($p < 0.05$) predictors of overall assessment and class rank in univariate models. Mean interview score ($p = 0.003$) and basic science scores ($p = 0.04$) were predictors of overall assessment alone in univariate models. No variables predicted failure to complete residency ($n = 6$).

Conclusions: Some applicant variables may show predictive value of resident clinical competency as measured by faculty assessment. The limitations of this study include its sample size and retrospective nature.

Table 1: Selection Criteria

| Variable | Level | N | Mean ± SD (min,max) or N (%) |
|---------------------------------------|--|-----|------------------------------|
| Total Sheet Score | | 124 | 63.7 ± 9.0 (40.6, 90.0) |
| Mean Interview Score | | 122 | 19.6 ± 2.4 (13.0, 25.0) |
| Mean Letter of AOA | | 119 | 3.8 ± 0.5 (2.5, 5.0) |
| | 1 | 127 | 11 (8.7%) |
| | 0 | | 116 (91.3%) |
| Step 1 Score | Above Mean | 126 | 64 (50.8%) |
| | Below Mean | | 62 (49.2%) |
| Step 2 Score | Above Mean | 111 | 75 (67.6%) |
| | Below Mean | | 36 (32.4%) |
| Medical School Rank | Foreign/Unknown/Osteopathic | 124 | 19 (15.3%) |
| | Low Reputation | | 8 (6.5%) |
| | Fair Reputation | | 22 (17.7%) |
| | Good Reputation | | 70 (56.5%) |
| | Outstanding Reputation | | 5 (4.0%) |
| Basic Science | Any marginal or failing grades | 124 | 10 (8.1%) |
| | All pass grades | | 30 (24.2%) |
| | Mix of pass, high pass, and rare honors | | 59 (47.6%) |
| | Mostly high pass and honors | | 18 (14.5%) |
| | Mostly honors, AOA | | 7 (5.7%) |
| Overall Performance Clerkships | Any marginal or failing grades | 124 | 8 (6.5%) |
| | All pass grades | | 14 (11.3%) |
| | Mix of pass, high pass, and rare honors | | 62 (50.0%) |
| | Mostly high pass and honors | | 36 (29.0%) |
| | Mostly honors, AOA | | 4 (3.2%) |
| EM Clerkship | Fail | 115 | 0 |
| | Pass | | 15 (13.0%) |
| | High Pass | | 52 (45.2%) |
| | Honors | | 48 (41.7%) |
| Med Clerkship | Fail | 117 | 1 (0.9%) |
| | Pass | | 50 (42.7%) |
| | High Pass | | 43 (36.8%) |
| | Honors | | 23 (19.7%) |
| Surgery Clerkship | Fail | 118 | 3 (2.5%) |
| | Pass | | 53 (44.9%) |
| | High Pass | | 40 (33.9%) |
| | Honors | | 22 (18.6%) |
| Exemplary Characteristics | Yes | 127 | 28 (22.1%) |
| | No | | 99 (78.9%) |
| Dean's Letter | Concerns Raised, lower 10% | 124 | 0 |
| | Good Candidate, lower 1/3 | | 26 (21.0%) |
| | Very Good Candidate, middle 1/3 | | 50 (40.3%) |
| | Excellent Candidate, upper 1/3 | | 35 (28.2%) |
| | Outstanding Candidate, AOA top 10% | | 13 (10.5%) |
| Research/Leadership Roles | No research background; or no known leadership roles | 124 | 5 (4.0%) |
| | 2 | | 41 (33.1%) |
| | Some research background and at least 1 publication; or some leadership roles | | 59 (47.6%) |
| | 4 | | 16 (12.9%) |
| | Strong background with publications; or many leadership roles in diverse endeavors | | 3 (2.4%) |
| Personal Statement | Poorly Written, questions are raised concerning intent | 124 | 23 (18.6%) |
| | Adequate or typical statement | | 92 (74.2%) |
| | Clear, well-written, impressive | | 9 (7.3%) |

Table 2: Simple Linear Regression Univariate Models

| Variable | Level | Overall Assessment (p-value) | Class Rank (p-value) |
|--|--|------------------------------|----------------------|
| Total Sheet Score (percentile) | -- | 0.0106* | 0.0037* |
| Mean Interview Score | -- | 0.0029* | 0.0812 |
| Mean Letters of Recommendation | -- | 0.2989 | 0.1462 |
| Step 1 Score | Above Average | 0.5014 | 0.6953 |
| Step 2 Score | Above Average | 0.0246* | 0.0181* |
| AOA | In AOA | 0.0038* | 0.0010* |
| Exemplary Characteristics | Yes | 0.1213 | 0.3479 |
| Medical School Rank (baseline Outstanding Reputation) | Foreign/Unknown/Osteopath | 0.8267 | 0.9096 |
| | Low Reputation | 0.7748 | 0.8265 |
| | Fair Reputation | 0.8775 | 0.6583 |
| | Good Reputation | 0.6865 | 0.8290 |
| Basic Science (baseline 'All Pass Grades') | Any marginal or failing grades | 0.8073 | 0.4789 |
| | Mix of pass, high pass, and rare honors | 0.3615 | 0.8952 |
| | Mostly high pass and honors | 0.3862 | 0.2888 |
| | Mostly honors, AOA | 0.0402* | 0.1144 |
| Overall Performance Clerkship (baseline 'All Pass Grades') | Any marginal or failing grades | 0.7278 | 0.5078 |
| | Mix of pass, high pass, and rare honors | 0.4978 | 0.5079 |
| | Mostly high pass and honors | 0.3658 | 0.3993 |
| | Mostly honors, AOA | 0.0835 | 0.0535 |
| Dean's Letter (baseline 'Very Good Candidate (middle 1/3)') | Good Candidate, lower 1/3 | 0.8022 | 0.8716 |
| | Excellent Candidate, upper 1/3 | 0.6319 | 0.9046 |
| | Outstanding Candidate, AOA top 10% | 0.0191* | 0.0393* |
| Research/Leadership Roles (Baseline 'Some research background and at least 1 publication; or some leadership roles') | No research background; or no known leadership roles | 0.9106 | 0.9782 |
| | 2 | 0.7743 | 0.3822 |
| | 4 | 0.6937 | 0.8183 |
| | Strong background with publications; or many leadership roles in diverse endeavors | 0.6537 | 0.8028 |
| Personal Statement (Baseline 'Adequate or typical statement') | Poorly Written, questions are raised concerning intent | 0.5538 | 0.6957 |
| | Clear, well-written, impressive | 0.9706 | 0.7735 |
| Med Clerkship (Baseline Honors) | Fail or Pass | <0.0001* | 0.0003* |
| | High Pass | 0.2908 | 0.2425 |
| EM Clerkship (Baseline Honors) | Pass | 0.7975 | 0.7504 |
| | High Pass | 0.8152 | 0.4318 |
| Surg Clerkship (Baseline Honors) | Fail or Pass | -0.20 | 0.9660 |