

Predictors of Milestone Attainment in Psychiatry Residency: A Preliminary Analysis

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Abstract

Few, if any, objective metrics exist for predicting success in residency training. Part of the dilemma is measuring “success” in a meaningful way. Here we propose using Aggregate Overall Milestone Scores (AOMS) to operationalize performance in a psychiatry residency program. To establish construct validity, AOMS significantly correlated to program director rating of Top, Middle, and Bottom third of training for the PGY-2, 3, and 4 years. Significant predictors of AOMS at the end of the third year included attending a Top 30 medical school, attending a medical school that did not rank their students in the MSPE, and having lower Step 1 scores. Predictors of disciplinary action included higher Step 1 scores and residents that program directors deemed “complainers.” USMLE Step 2 CK scores correlated to PGY-2 milestone attainment. Step 2 scores during the PGY-2, 3, and 4 years correlated to Clinical Psychiatry PRITE scores. In summary, AOMS may serve as a proxy for residency performance and to increase the generalizability of these findings, we suggest a multi-site analysis using similar methodology.

Background & Purpose

Residency training directors utilize a variety of metrics to screen applicants, such as USMLE scores, grades, letters of recommendation, and the personal statement. However, many of these strategies are not based on factors that actually predict performance in residency training at that unique program. Furthermore, the number of applicants to psychiatry residency has exploded in recent years, and applicants are applying to twice as many programs as they did five years ago (1). Predicting performance is challenging since residents may excel in a number of different domains. In 2015, the ACGME required each psychiatry program use Milestones to evaluate the performance of each resident twice per year (2). Milestones include six competency domains, and there are a total of 22 Subcompetencies rated on a scale of 1-5. We propose using Aggregate Overall Milestone Scores (AOMS) to help separate performance. Based on the results of this analysis, we hope to screen and rank our applicants more effectively by understanding which are the most meaningful metrics available to program directors at the screening phase.

Methods

Research objectives:

1. Evaluate the validity of AOMS as a proxy for evaluating performance in psychiatry residency training. AOMS will be compared to residency program directors' global evaluation of each resident in each class using the designations “Top Third,” “Middle Third,” or “Bottom Third.”
2. Identify predictors of performance using AOMS scores during psychiatry residency training using information available to program directors on the candidate's interview day, such as academic performance in medical school, performance in standardized examinations (USMLE Step I and II), and interview performance.
3. Identify predictors of disciplinary action (for example, written warning, verbal warning, probation) taken against a resident using information available to program directors on the candidate's interview day.
4. Examine correlations between AOMS and Psychiatry Resident-In-Training Examination (PRITE) scores.
5. Examine correlations between USMLE Step I and II performance with AOMS scores.
6. Examine correlations between USMLE Step I and II performance with PRITE scores.

We conducted a retrospective analysis of data from current and previous residents from the Class of 2015 to the Class of 2022. AOMS were calculated for residents at the end of their third year of training, since approximately 30% of residents forgo their fourth year to do a Child and Adolescent Fellowship. Variables included Medical School Ranking (1-5 based on US News and World Report ranking (3)), whether the medical school was in the US News and World Report Top 30 or not, AOA status, GHHS status, prior publications, class rank, USMLE Step 1 score, USMLE Step 2 CK score, and PRITE scores. Milestones from only the Spring assessments were used. Data from 45 residents were used to calculate the AOMS at the end of the third year. Overall, milestone data was used from 145 separate assessments.

The study was reviewed by the Emory Institutional Review Board and was not deemed human subject research (correspondence available upon request). The study was also discussed and given approval by representatives of the AAMC and NRMP.

Results

Construct validity

Correlations between AOMS scores and program director rating (thirds) were measured using Spearman correlation. Correlations between AOMS and PD rating were significant for the PGY-2, PGY-3, and PGY-4 year ($P < 0.05$).

Predictors of AOMS

At the end of the third year, predictors of AOMS were calculated using multiple linear regression. Predictors included attending a Top 30 Medical School ($p = 0.014$), lower Step 2 CK scores ($p = 0.039$), and missing class rank ($p = 0.005$).

Predictors of disciplinary action

Using a proportional odds logistic regression, for predictors of disciplinary action the following was found: lower Step 1 scores ($p=0.04$), residents that program directors felt complained about the program, work, or staff ($p=0.01$), and an inverse relationship between residents that program directors felt served as a role model ($p=0.002$).

Relationship between PRITE scores and AOMS

Milestone attainment correlated significantly to PRITE scores in the PGY-2 year for the neurology ($p=0.002$) and psychiatry standardized scores ($p=0.003$). Milestone attainment at the end of the third year also correlated significantly to psychiatry standardized scores ($p=0.04$). There no significant correlations between PRITE scores and milestone attainment in the first and fourth year of training.

Milestone Attainment and Step Scores

Milestone attainment at the end of the PGY-2 year correlated to Step 2 CK scores. There was no correlation between Step 1 scores and milestone attainment at any years of training, nor were there correlations between Step 2 scores in the PGY-1, 3, and 4 year with milestone attainment.

Step Scores and PRITE Scores

USMLE Step 1 scores correlated with Clinical Psychiatry PRITE scores at the PGY-2 and PGY-3 year. USMLE Step 2 scores correlated with the Clinical Psychiatry scores at the PGY-3, PGY-3, and PGY-4 year. Neuroscience PRITE scores in the PGY-2 and PGY-3 years correlated to USMLE. USMLE Step 2 Scores. Clinical Neurology scores at any training year did not correlate to Step 1 or 2 performance.

Conclusion

In this preliminary analysis, we found that higher USMLE scores did not result in greater attainment of AOMS at the end of the third year of psychiatry residency training in single program. We do not know how generalizable these results for other psychiatry programs or other specialties of medicine. We recommend similar studies at multiple sites using the same methodology. The use of AOMS could be utilized for other medical specialties, not just psychiatry, as a proxy for resident success. Using AOMS as an outcome depends on how rigorous and objective the milestones are scored by each program's Clinical Competency Committee. One previous study on predicting problematic residents suggested that negative comments in the MSPE led to disciplinary action (4). We did not have similar findings, but were knowledgeable of this finding at the time of the study and could have made decisions about interviews based on this. Results from this analysis have led to our residency program re-thinking the role of USMLE scores and moving toward a more holistic review of the applicant's materials, which is based on experiences, metrics, and attributes (5). Since our initial analysis we have revised the class rank methodology, and plan to revisit the regression for Objective #2 and 3.

References

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