Reliability and Validity of PAEA End-of-Rotation Exam Scores
Theresa Hegmann, MPAS, PA-C; University of Iowa, Michel Statler, MLA, PA-C, Rosalind Franklin University of Medicine and Science, and Mike Roscoe, PhD, PA-C, Butler University

**Background**

In 2013, PAEA launched End-of-Rotation (EOR) exams covering core clinical rotation content. These exams are starting to be utilized like the National Board of Medical Examiners' subject exams, but have not yet been evaluated for reliability or validity against outcomes such as the Physician Assistant National Certification Exam (PANCE).

**Purpose**

This study's purpose was to determine if a composite scale based on all seven PAEA EOR exams can be used as an effective measure of comprehensive medical knowledge for physician assistant students in their clinical year and a predictor for performance on PANCE.

**Methods**

This study was a retrospective analysis of pre-existing, de-identified data gathered by three physician assistant programs for educational purposes. Scores for all seven PAEA EOR exams and scores for the PANCE were available for all students in the class of 2014 for all three programs, overall N = 134. SPSS version 21 was used for descriptive and inferential data analysis.

**Results**

<table>
<thead>
<tr>
<th>EOR Exam</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Pearson Correlation with PANCE*</th>
<th>Value of alpha if item is removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine</td>
<td>134</td>
<td>76.10</td>
<td>8.45</td>
<td>.68</td>
<td>.844</td>
</tr>
<tr>
<td>Surgery</td>
<td>134</td>
<td>75.64</td>
<td>6.00</td>
<td>.66</td>
<td>.847</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>134</td>
<td>77.64</td>
<td>6.75</td>
<td>.64</td>
<td>.850</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>134</td>
<td>76.46</td>
<td>6.22</td>
<td>.61</td>
<td>.852</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>134</td>
<td>75.63</td>
<td>5.59</td>
<td>.47</td>
<td>.872</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>134</td>
<td>72.60</td>
<td>7.24</td>
<td>.66</td>
<td>.846</td>
</tr>
<tr>
<td>Women’s Health</td>
<td>134</td>
<td>74.28</td>
<td>5.67</td>
<td>.57</td>
<td>.855</td>
</tr>
</tbody>
</table>

Descriptive statistics, Pearson Correlations with PANCE, and Cronbach's alpha if item is deleted, for each of the seven version 1 PAEA end-of-rotation exams. (*p < .0005 for all values)

- RELIABILITY: Cronbach’s alpha = 0.871 for the seven EOR exam scores
- CORRELATIONS with PANCE: 0.47 – 0.68
- SIMPLE REGRESSION: R = 0.810; adjusted R² = 0.654 (the 7-item EOR exam average explains ~65% of PANCE score variance)
- RECEIVER OPERATING CHARACTERISTIC (ROC) analysis: area under the curve (AUC) = 0.975 for 7-item average (p = .005)
- SENSITIVITY and SPECIFICITY: a cut-off score of 68.9 on the 7-item exam average had a sensitivity = 100% and specificity = 94% for identifying students who failed the PANCE

**Conclusions**

This study provides solid evidence for both the reliability of the composite seven-item EOR score, and for the validity of using this composite score for the assessment of general medical knowledge in clinical PA students for the purpose of predicting whether their knowledge base is adequate to pass the PANCE. Future research with increased sample size across multiple exam versions is needed to see if statistical correlations remain consistent.

**References**