

## Development of an Academic Remediation Policy

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### Introduction

Any anesthesiology residency would like to identify the resident with knowledge problems before the resident begins to fail rotations, or is unlikely to pass certification examinations following graduation. In an effort to identify predictors of resident knowledge problems, a database was started last year cataloging several different measures of resident knowledge. Trends toward differences in standardized examination scores were identified between residents who had experienced problems in the residency, and those who had had no problems. It was also noted that faculty in the clinical arena gave satisfactory scores for knowledge unless the knowledge problems became extreme, so faculty evaluations would not be useful in the early identification of knowledge problems. Our purpose was to develop lower limits of acceptable performance, below which the resident would be started in a remediation program designed to address knowledge problems not yet clinically evident.

### Methods

Information was obtained from the resident portfolios and residency files by the chair of the Evaluation and Competence Committee, and de-identified for analysis. A database was formed beginning with the class of 1999, using the scaled scores from the American Board of Anesthesiology (ABA) In-Training Examination (ITE) during the years that the residents were in the program and immediately following graduation, changes in the ITE scaled scores between years, the percentile rank score from the Anesthesia Knowledge Test 1 and 6 (AKT 1 and AKT 6). The presence or absence of the following outcomes were also noted: receipt of less-than-satisfactory grades on any rotation, academic probation, resignation or termination for academic problems, and failure on the ABA written examination when first eligible. Residents with any outcome problems were classified as Unsuccessful Residents; residents with no problems were classified as Successful Residents. The mean, median, mode, and standard deviation of the examination scores, and changes in the scaled scores on the ITE between successive years, were calculated for the two groups of residents. Various algorithms for predicting which residents would prove unsuccessful were then tested against the available data, to check for false positive and false negative predictions.

### Results

The lower limit of acceptable performance was established as follows: a score in the 50<sup>th</sup> percentile on the AKT 1 and AKT 6 examinations, an ITE scaled score of 15 following the clinical base year, and the mean minus 1 standard deviation of the successful residents' scores for the ITE examinations following the CA-1 and CA-2 years. It was found that these lower limits identified all residents who went on to have academic problems, fail the ABA written examination, or receive a score on the ABA written examination that the program did not know to be a passing score. All of the residents who were falsely predicted to be unsuccessful were clustered into a single year, when the scaled score corresponding to a passing score on the ABA written examination was unusually low.

### Discussion

Using the lower limits of acceptable performance developed in this study, our residency program developed a remediation policy of tutorial help from both the regular resident advisor and special advisors, and special educational activities that include review course attendance. Now that this program has been implemented, we will continue to track resident performance to see if the program will, indeed, reduce the incidence of clinically-evident knowledge problems, or failure on the ABA written examination following graduation.

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	AKT 1 %ile	AKT 6 %ile	ITE post CB scaled	ITE post CA1 scaled	difference ITE CB to CA1	ITE post CA2 scaled	difference ITE CA1 to CA2	ITE post CA3 scaled	difference ITE CA2 to CA3
<b>successful residents</b>									
n	25	25	33	33	33	36	33	22	22
mean	71	66	18	29	11	34	4.5	40	7.4
median	76	59	17	30	11	34	4	39	7
mode	89	57	17	30	11	36	4	38	7
range	7 to 99	4 to 99	8 to 33	15 to 41	4 to 18	20 to 43	1 to 11	33 to 47	1 to 16
sd	24	26	5.2	6.3	3.5	5.4	2.8	4.5	4.1
<b>unsuccessful residents</b>									
n	17	17	20	21	17	20	18	12	12
mean	38	39	14	21	8	25	4.9	32	5.8
median	43	37	13	21	9	26	305	32	6.5
mode	43	37	15	19	9	26	3	27	9
range	4 to 81	8 to 71	8 to 22	17 to 27	minus 2 to 17	17 to 31	minus 2 to 12	25 to 40	minus 2 to 11
sd									
remediation cutoffs	50	50	15	23	not specified	28	not specified	out of program	out of program