

Improved Testing Results for International Medical Graduates

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Abstract

Background: Although it is well known that low scores by residents in their in-training examinations predict failure at eventual certification, there is a paucity of information regarding results with focused intervention.

Methods: Over a two-year period, international medical graduates (IMGs) accepted as CA-1 residents in the Department of Anesthesiology were provided an intensive one-month text-based teaching program focusing on anesthesia-specific medical knowledge. The Anesthesia Knowledge Test® (Metrics Associates, Inc., Chelmsford, MA) as a surrogate for the American Board of Anesthesiology In-training Examination was administered on the first day (AKT-1), after the one-month training period (AKT-1), and after six months (AKT-6). AKT test results were reported as percentiles of all anesthesia residents taking the test. After two years, a retrospective review of test results was performed with repeated measures ANOVA.

Results: IMG residents increased their percentile test performance on the AKT-1 from $31.2 \pm 6.3\%$ baseline (mean \pm SEM) to $56.8 \pm 6.4\%$ after the one month session ($p < 0.05$). This increased performance was maintained with the AKT-6 at six months: $62.8 \pm 7.8\%$.

Conclusion: An intensive anesthesia text-based one-month didactic program can improve the test performance of IMGs. This effect is sustained after six months.

Key Words: certifying examination; in-training examination; education; predictions; residents; international medical graduates

Introduction

Studies have shown that individuals scoring in the lower percentiles on in-training examinations are likely to fail their certification exams¹ and that International Medical Graduates (IMGs) are more likely to score in the lower percentiles.² Many examinations now exist that can identify these individuals early in their training.³ Hemmer and Market used an in-clerkship test to identify medical students with insufficient knowledge and demonstrated a significant effect from counseling on subsequent performance.⁴ However, no study in the anesthesiology literature demonstrates that any intervention with IMG anesthesia residents can correct these deficiencies. In this study, we measured the outcome of a one-month intensive didactic intervention for these at-risk individuals.

Methods

Over a two-year period, International Medical Graduates (IMGs) accepted as CA-1 residents in the Department of Anesthesiology were provided an intensive one-month text-based teaching program focusing on anesthesia-specific medical knowledge. The IMGs met with a proctor (E.H.) every weekday at 0600, prior to the start of cases. Each day the focus of discussion was one to three chapters of an anesthesiology review text. For the period of the study, the text used was the Lange review text in anesthesiology.⁵ The residents took turns as the primary presenter of the information in the text chapter(s), while the attending added clinical and didactic commentary. Each session lasted for an hour.

The Anesthesia Knowledge Test[®], AKT-1 (Metrics Associates, Inc., Chelmsford, MA) as a surrogate for the American Board of Anesthesiology In-training Examination was administered on the first day and after the one-month training period. After six months, the AKT-6 was administered. AKT test results were reported as percentiles of all anesthesia residents taking the

test; thus, all the residents taking the test served as the control for our IMG resident performance. The primary dependent variable was the test performance of the residents reported as a percentile rank of the residents taking the test. After two years, analysis of test results was performed with repeated measures ANOVA. Normal curve equivalents associated with each percentile were compared. Significance was defined as $p < 0.05$. If the repeated-measures test was significant for a time effect, the Least Significant Difference *post hoc* test was used to compare scores at each time.

A power analysis was performed to see how many residents needed to be studied to come to a meaningful conclusion. The goal of the study was to test the null hypothesis that the mean increase in percentile performance was zero. The criterion for significance (alpha or p-value) was set at 0.05, and the test was 2-tailed, which means that an effect in either direction would be interpreted. With a sample size of 10 residents, the study was calculated to have a power of 80%. A performance difference of 10 points was selected as the smallest difference that would be important to detect, in the sense that any smaller difference would not be of educational significance.

Results

Ten IMG residents were studied. The baseline percentile scores for this group on the first day of class were 31.2 ± 6.3 (mean \pm SEM, $n=10$). The percentile scores increased to 56.8 ± 6.4 ($p < 0.05$) with the post-test given on the last day of the one-month course. When the third test (AKT-6) was given after six months, the percentile scores were 62.8 ± 7.8 (see Figure 1). The one-month and six-month percentile scores were both significantly different ($p < 0.05$) from the baseline percentile score, but were not significantly different from each other. All residents studied

reported they were happy with the focused program, and each resident reported that the focused course improved his/her score.

Discussion

We considered it inappropriate to randomize our IMG residents to participate in the course or not. Thus, these results rely on the percentile norms calculated from the AKT as the control group. The percentile score results of our IMG residents reflect how well the latter performed compared to all residents taking each test at the same level. The study lasted two years, because that is how long it took to collect data on 10 IMGs. Normal equivalents were used to do the statistics, but the results are reported in percentiles, because most educators understand percentiles better. All ten IMGs involved in this study went on to pass their written ABA examinations.

Since we did not have AKT data on our non-IMG residents, it is possible that the latter may have had a similar improvement in performance. While our results suggest that the focused review program improved academic performance vis-a-vis all residents taking the AKT nationally, we cannot be certain that they performed better compared to the national IMG cohort. It is thus theoretically possible, although in our opinion unlikely, that our IMG residents performed better over time because of the general teaching and learning environment of our program rather than because of the focused review conducted.

It has been recognized in the medical community that a general bias against IMGs exists, despite the outstanding accomplishments of many representatives from that group.⁶ IMGs are more likely to seek fellowship training after residency, and most IMGs end up practicing in the United States.⁷ IMGs are an especially important aspect of the core delivery to underserved

populations.⁸ Thus, it is in the interest of our profession and our society to educate IMGs as well as we can.

It is impossible to ascertain the quality of medical education provided by many international medical schools. This can serve to discourage residency programs from selecting international medical graduates for post-graduate training. Medical knowledge may be the easiest core competency to measure, but providing that medical knowledge to residents who may have had less preparation than expected is very challenging. It is easy to teach well-prepared residents; however, teachers are challenged by the poorly prepared. We submit that with a focused didactic short program, those teachers who wish to accept that challenge can succeed.

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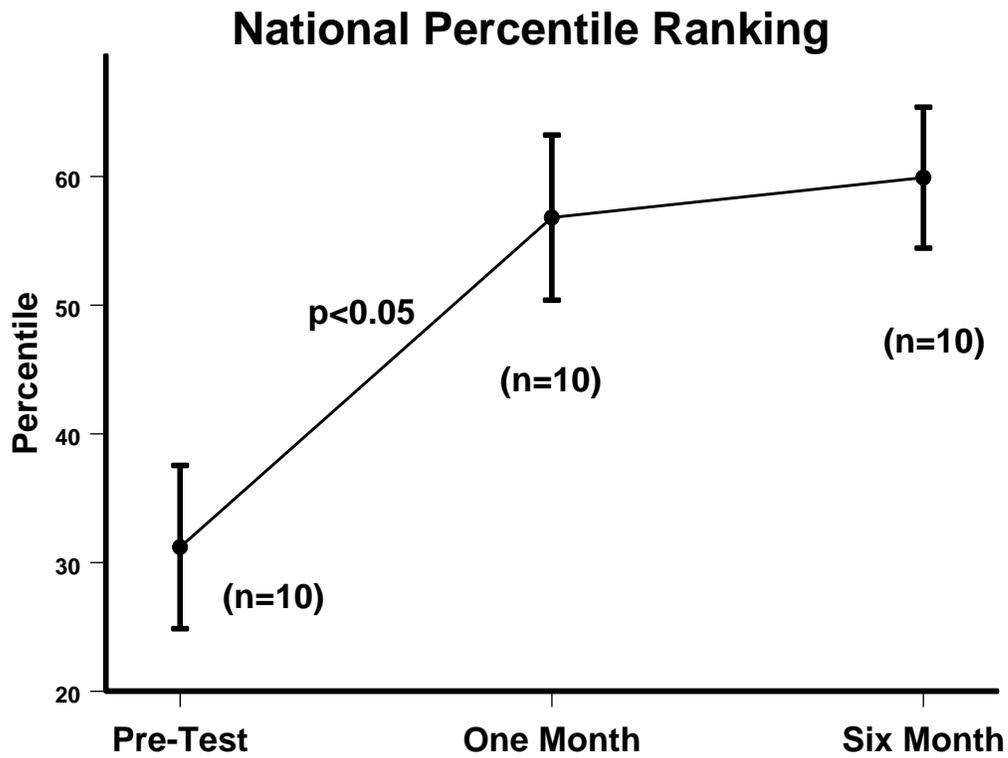


Figure 1. Results of the Anesthesia Knowledge Test® (Metrics Associates, Inc., Chelmsford, MA). The Pre-Test was the AKT-1 given on the first day of the one-month course. The AKT-1 was again given on the last day of the one-month course. The AKT-6, designed for residents who have received six months of training, was given at six months.