The American Board of Surgery Certifying Examination: A Retrospective Study of the Decreasing Pass Rates and Performance for First-Time Examinees

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BACKGROUND: There has been a noticeable decrease in the pass rate for the American Board of Surgery Certifying Examination during the last 5 years. We hypothesize that this decline is statistically significant, and we wish to determine whether the pass rates had any geographic patterns of distribution.

METHODS: In this retrospective cohort trial, publically available electronic data sets of pass rates on the American Board of Surgery Certifying Examination were evaluated from the American Board of Surgery website. χ^2 tests were used to determine whether there was any association between the pass rates and the academic year. A descriptive geographic evaluation of program-specific pass rates for first-time examinees was also performed.

RESULTS: From 2006 to 2010, there has been a 7% decrease in the pass rate for the American Board of Surgery Certifying Examination. A χ^2 test shows that there is a statistically significant association with the pass percentage on the American Board of Surgery Certifying Examination and the year ($p < 0.0001$). Subgroup analysis demonstrated a difference in pass rate between 2006 and 2007 ($p = 0.02$). Geographic analysis showed the pass rates for first-time examinees were the highest in Rhode Island (100%) and the lowest in Puerto Rico (63%) from 2005 to 2010. Three of the 5 highest-performing states are on the Pacific Coast, and 4 of the 9 lowest-performing states are in the southern United States. There are differences between these 2 groups of states ($p < 0.001$).

CONCLUSIONS: There was a significant decrease in the pass rate for the American Board of Surgery Certifying Examination from 2006 to 2010. There also were some geographic patterns relating to first-time examinee performance from 2005 to 2010.

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COMPETENCIES: Patient Care, Medical Knowledge, Interpersonal and Communication Skills

INTRODUCTION

The American Board of Surgery Certifying Examination is an oral examination consisting of 3 consecutive sessions conducted by a team of 2 examiners. Its purpose is to evaluate a candidate's clinical skills in organizing the diagnostic evaluation of common surgical problems and in determining appropriate therapy.[1] This oral examination has been shown to have some validity in assessing a candidate's clinical judgment as a primary evaluation tool for board certification in general surgery.[2] The examination directly assesses the Accreditation Council for Graduate Medical Education core competencies of Patient Care, Medical Knowledge, as well as Interpersonal and Communication Skills. The first-time pass rate on the American Board of Surgery Certifying Examination is a standard used to evaluate residency programs.[3]

There is a paucity of published manuscripts regarding trends in pass rates for this examination. In 2006, the global pass rate was 84% with first-time examinee pass rates of 86% between 2002 and 2006. Both of these rates had remained stable over the years.[3,4] One publication in 2004 quoted a failure rate for first-time examinees of 15%, which is consistent with the published pass rates.[5] The American Board of Surgery Certifying Examination statistics, including pass rates for first-time examinees for specific general surgery residency programs, are electronically available for public review.[6,7] Although pass rates had remained stable before 2006, online records indicate a decrease in overall pass rates from 84% in 2006 to 77% in 2010.[6]

The purposes of this retrospective study are 2-fold. First, we hypothesize that the decrease in overall pass rates on the American Board of Surgery Certifying Examination during the last 5 years has reached a level of statistical significance. Second, we wish to describe any geographic patterns associated with pass rates for first-time examinees.

METHODS

In this retrospective cohort study, the publicly available electronic data sets for the American Board of Surgery Certifying Examination were obtained from different web pages of the American Board of Surgery website.[6,7] Permission to use these data were granted with a personal communication with the director of psychometric and data analysis for the American Board of Surgery. Using the yearly overall pass rates, the number of residents that failed the examination was determined, and a 2×5 χ^2 test was performed to see whether overall pass rates for the American Board of Surgery Certifying Examination were associated with the year in which it was taken.[6] Subgroup 2×2 χ^2 tests were also performed to see whether any associated changes in performance between consecutive years were evident. Statistics were performed using Stata 11.1 statistical software (StataCorp, College Station, Texas) using an $\alpha = 0.05$.

To determine the geographic patterns of first-time examinee pass rates on the American Board of Surgery Certifying Examination, the number of first-time examinees and the pass rates were extrapolated from the electronically published residency program-specific performance data.[7] Residency programs were grouped together by state, and state-wide first-time examinee pass rates were determined. Independent double entry verification was performed to ensure the accuracy of the extrapolated database entries.

RESULTS

The overall results on the American Board of Surgery Certifying Examination are listed in Table 1. There is a general decrease in the overall pass rate from 84% in 2006 to 77% in 2010, representing a 7% overall decrease in pass rate. The overall pass rate for the 4938 examinees studied was 80% between 2006 and 2010. A χ^2 test showed that the pass rate is significantly associated with the year ($p < 0.0001$). Subgroup analyses with χ^2 tests performed between individual years from Table 1 showed an association between examination performance and the year from 2006 to 2007 ($p = 0.04$). There were no associations between examination performance and the year from 2007 to 2008 ($p = 0.54$), from 2008 to 2009 ($p = 0.07$), or from 2009 to 2010 ($p > 0.99$).

The geographic distribution of pass rates for first-time examinees is presented in Table 2 for the United States, the District of Columbia, and Puerto Rico. Among the 4160 first-time examinees with data available, 3467 (83%) passed the American Board of Surgery Certifying Examination. No data were available for Alaska, Idaho, Montana, South Dakota, or Wyoming. The American Board of Surgery Certifying Examination pass rates from 2005 to 2010 ranged from 100% in Rhode Island to 63% in Puerto Rico. Three of the highest-ranking states with a combined pass rate of 90% (Washington, Oregon, and California) make up the Pacific Coast of the continental United States. Four of the nine lowest-ranking states with a combined pass rate of 75% (Mississippi, Kentucky, Louisiana, and South Carolina) are located in the modern-defined southern United States. A χ^2 test showed a difference in the first-time examinee pass rates between the higher performing Pacific Coast states (Washington, Oregon, and California) and the lower-performing Southern states (Mississippi, Kentucky, Louisiana, and South Carolina) ($p < 0.001$). An accompanying visual rank-ordered depiction of these first-time examinee pass rates is shown in Fig. 1 for the continental United States.

DISCUSSION

We conclude that there is a statistically significant decrease in the overall pass rates in the American Board of Surgery Certifying Examination from 2006 to 2010. The only significant decrease between individual years was between 2006 and 2007, with near-statistical significance between 2008 and 2009. The cause of this decrease is not entirely clear. The ACGME implemented the 80-hour work week standards on July 1, 2003. In 5-year surgical residency programs, interns who started in 2003 would have graduated in the academic year starting in 2007. This would coincide with the only statistically significant year-to-year decrease in performance on the American Board of Surgery Certifying Examination. Interns in 2003 graduating after completing a general surgery residency of 6 and 7 years' duration would also potentially be contributing to this decrease. This trend contradicts a study of New England states that showed no changes in the American Board of Surgery Certifying Examination first-time examinee pass rates before the ACGME work-hour standards (2001-2002) and after the ACGME work-hour standards (2005-2006).[8] Similarly, a

TABLE 1. Results of the American Board of Surgery Certifying Examination from 2006 to 2010

Examination Result	Year 2006	2007	2008	2009	2010	Total [n, (%)]
Pass [n, (%)]	1093 (84)	1021 (81)	1032 (80)	909 (77)	882 (77)	4938 (80)
Fail [n, (%)]	208 (16)	240 (19)	258 (20)	272 (23)	264 (23)	1241 (20)
Total [n, (%)]	1301 (100)	1261 (100)	1290 (100)	1181 (100)	1146 (100)	6179 (100)