

# Comparing Surgical Clerkship Performance of Medical and Physician Assistant Students

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**OBJECTIVE:** Third-year medical students (MS-III) and second-year physician assistant students (PA-S) have similar core clinical rotations during their education. Uniquely at our institution, both groups rotate together and are assessed by the same evaluation and grading standards. This study compares the performance of MS-III and PA-S during their combined surgical clerkship rotation.

**DESIGN:** A retrospective analysis on students' final clerkship grades, individual grades for clinical performance evaluation, objective structured clinical examination, faculty tutorials, and National Board of Medical Education (NBME) general surgery examination for academic years 2013 and 2014. Statistical analysis using the Statistical Package for Social Sciences (SPSS) was used. A  $p < 0.05$  was considered statistically significant.

**SETTING:** The study took place in the Department of Surgery at the University of Oklahoma School of Community Medicine, Tulsa, Oklahoma.

**PARTICIPANTS:** All MS-III and PA-S that performed a clinical rotation in the Department of Surgery at the University of Oklahoma School of Community Medicine, Tulsa were included in the study. Fourth-year medical students on elective rotations were excluded. A total of 95 students were included, 51 MS-III and 44 PA-S.

**RESULTS:** The results indicated that MS-III had statistically significant higher clinical performance evaluation ( $p = 0.005$ ), NBME ( $p < 0.001$ ), and tutorial scores ( $p = 0.03$ ) as compared to PA-S. However, there were no statistically significant findings between final grades and objective structured clinical examination scores. In comparing 2013 to 2014 MS-III classes, no statistically significant

differences existed, but the 2014 PA-S class had statistically significant higher NBME ( $p = 0.022$ ) and tutorial scores ( $p = 0.015$ ) as compared to 2013 PA-S class.

**CONCLUSION:** MS-III performed better in tests evaluating medical knowledge, possibly a reflection of more in-depth different organ systems physiology and pathophysiology education that MS-III receive. No significant difference in clerkship performance was found. This could be attributed to similar clinical education both receiving as well as PA-S often having a history of prior professional health care experience. Over time of the study, PA-S performance seems to have improved. These observations might help to improve future curricula for MS-III as well as for PA-S. (J Surg Ed ■■■■-■■■. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

**KEY WORDS:** medical student, physician assistant student, surgical clerkship, education, MS-III, PA-S

**COMPETENCIES:** Medical Knowledge, Practice-Based Learning and Improvement

## INTRODUCTION

It has been reported that the demand for physician services growth is faster than the supply. This especially holds true for surgical specialties. The overall projected shortfall that this increase in demand would lead to has been reported to be between 46,100 and 90,400 physicians across all specialties and 23,100 to 31,600 in surgical specialties by 2025.<sup>1</sup> On the contrary, it is projected that the supply of physician assistants (PAs) would grow from approximately 74,500 in 2010 to 127,800 by 2025.<sup>2</sup> The American Academy of Physician Assistants (AAPA) reports that 25% of clinically practicing PAs work in surgical specialties or subspecialties.<sup>3</sup>

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The role of PAs is described by the AAPA as being able to practice in any medical or surgical specialty, perform almost all duties that physicians perform, assist in surgery, provide preoperative and postoperative care, serve as house officers, and work with residents to allow them more educational and conference time while offsetting physician shortages and trimming costs.<sup>3,4</sup>

General surgery is one of the core clinical rotations in both medical schools and PA schools. At our institute, both third-year medical students (MS-III) and physician assistant students (PA-S) rotate in surgery for 8 weeks at the same time, work in the same teams, are subjected to the same evaluation methods, and take the objective structured clinical examination (OSCE) and National Board of Medical Education (NBME) general surgery examination together. This unique setting allows us to directly compare the performance of MS-III and PA-S in their general surgery rotation as another way to evaluate the education in our 30-month PA school program and our 4-year medical school program.

## MATERIALS AND METHODS

This is a retrospective analysis of students' grades during their surgery clerkship for the classes of 2013 and 2014. The study included 95 students, 51 MS-III and 44 PA-S. The students were evaluated and graded using different tools during their clerkship. These tools included (1) clinical performance evaluation (CPE): the students are evaluated and graded by general surgery faculty and residents for their clinical performance on the hospital ward, in the operating room, and in outpatient clinic; (2) OSCE: the students are graded on their ability to perform during a standardized patient interview, physical examination, assessment and plan, and note writing; (3) faculty tutorials: group discussions that include all students that are on rotation at one time and a faculty member. The discussion topics are standardized case scenarios and the same for all clerkship rotations. Discussions are conducted in an interactive environment to allow assessment of students' knowledge; (4) NBME general surgery examination: this is a standardized national examination that both PA-S and MS-III students take at the end of their clerkship; and (5) final grade is calculated based on the following formula: CPE 30%, OSCE 25%, tutorials 20%, and NBME 25%.

The de-identified data were obtained from the Department of Surgery's Student Clerkship Coordinator in the form of a Microsoft Excel spreadsheet. The data included the number of students, class year, CPE, OSCE, tutorials, NBME, and final grades.

The data were imported into the Statistical Package for Social Sciences (SPSS); version 19 for statistical analysis. The data were first divided into 2 groups—MS-III and PA-S. For each group, the overall mean scores were calculated

for CPE, OSCE, tutorials, NBME, and final grades. Univariate analysis of variance was conducted to compare the mean scores of CPE, OSCE, tutorials, NBME, and final grades among the 2 groups (MS-III and PA-S). Next, within-group class comparisons were conducted on both groups: 2013 class of PA-S versus 2014 class of PA-S as well as 2013 class of MS-III versus 2014 class of MS-III.

All data analysis was conducted at the University of Oklahoma, Tulsa campus. The study was reviewed and approved by the University of Oklahoma Health Sciences Center Institutional Review Board.

## RESULTS

A total of 95 students rotated in surgery in the years 2013 and 2014, including 51 MS-III and 44 PA-S. The mean scores in CPE, OSCE, tutorials, NBME, and final grade categories for each group for both years are shown in [Figure A.1](#). MS-III mean scores were higher than PA-S mean scores in CPE ( $p = 0.005$ ), NBME ( $p < 0.001$ ), and tutorials ( $p = 0.03$ ). Univariate analysis showed no statistically significant differences in the mean OSCE and final grades between MS-III and PA-S.

Comparisons within the groups indicated no statistically significant differences in CPE, OSCE, tutorials, NBME, or final grades between the 2013 and 2014 MS-III classes ([Fig. A.2](#)). However, within the PA-S group, the 2014 class scored higher than the 2013 class in NBME and tutorials categories ([Fig. A.3](#)). Comparison between the MS-III and PA-S groups for each class year is shown in [Figures A.4](#) and [A.5](#).

## DISCUSSION

The overall number of general surgeons has not changed since 1994, despite increase in the population.<sup>5</sup> This shortage and its projected continued growth in the near future, creates a void where PAs would be needed to help fill.<sup>2</sup> The role of PAs in health care filling the demand for more physicians prompted us to assess the performance of PA-S and compare it with the performance of medical students during their general surgery clerkship rotation. The goal of our study was to assess if there were any significant differences in performance between MS-III and PA-S during their general surgery clerkship rotation.

We noted that the performance of MS-III and PA-S was comparable in their clinical performance in the OSCE. This could be explained by the limited clinical experience in both groups at this stage of their education as the surgery rotation is part of the first clinical year in both medical school and PA school. This finding has been similarly reported, but was not reproducible in another study.<sup>6,7</sup> Despite comparable performance in the OSCE, MS-III performed better on CPE than PA-S. The only difference between CPE and OSCE is that CPE evaluation by faculty and residents relies more on

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