



PAEA ASSESSMENT
INSIGHTS

*AN ANALYSIS OF END OF SUPERVISED CLINICAL
PRACTICE EXPERIENCE REQUIREMENTS*

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Introduction

As of January 2021, there were 267 accredited Physician Assistant (PA) Programs in the United States (US).¹ Each program requires students to complete Supervised Clinical Practice Experiences (SCPEs), but the assessment of student performance during SCPEs varies from program to program. Many programs require a multiple choice examination at the completion of a SCPE. In addition to these examinations, programs may evaluate student performance during SCPEs through preceptor evaluations (middle and end of experience), Objective Structured Clinical Examinations (OSCEs), case presentations, written assignments, professional behavior evaluations, faculty observations, patient logging, and other types of assessments. However, it is not clear how programs choose to weight these evaluations, the specific types of assessment programs use, if they are giving similar assessments after every SCPE, or if there is variation in assessments based upon the SCPE.

There is currently limited research explaining how programs are calculating SCPE grades or assessment tools they are using. Morici and colleagues surveyed 143 PA programs regarding the calculation of SCPE grades.² Of the 62 program respondents who answered the survey, 90.5% required either a locally or nationally developed multiple choice exam at the completion of the SCPE, with 81.8% of programs requiring a minimum passing score on the exam. The researchers also analyzed the percentages associated with the assessments for grading and found 59.7% of programs attributed 31-50% of the final grade to end of SCPE multiple choice exam, 46.8% of programs attributed 31-50% of the final grade to preceptor evaluations, and 59.7% of programs attributed 10-30% of the final grade to “other assignments.”² The results of the study showed a wide variation of weight assigned to assessment and also the types of assessment programs administered during SCPEs.

Gaining an idea of how SCPEs are assessed and graded is very difficult to perform since programs vary greatly in the type of rotations they require and forms of assessment they administer. Due to the limited research on SCPE assessments, the researchers conducted a qualitative study in an effort to better understand SCPE assessment at the program level and the weight assigned to each assessment to arrive at a final SCPE grade.

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Methods

SUBJECTS

After obtaining Institutional Review Board (IRB) approval from the University of Mount Union (UMU), the Physician Assistant Education Association (PAEA) provided a randomized list of member programs by geographic region, public/private designation, and new/establishing status. Thirty program names were generated. Programs were then divided into four quadrants by location to assure diverse geographic representation. After random selection, 20 programs (6 Northeast, 4 Northwest, 6 Southeast, 4 Southwest) were contacted to determine interest in participation in the study. 12 agreed, and no further programs were contacted when data saturation occurred. Program directors who agreed were scheduled to participate in a one-hour call with the researchers.

QUALITATIVE QUESTIONS

The call consisted of 12 open-ended questions that pertained to SCPEs and three for summative evaluation. Results from the summative evaluation were used for internal purposes. Examples of questions included, “In your program, how many SCPEs are required for each student?”, “What are the components of each SCPE (clinical rotation, reflection paper, exam, preceptor evaluation, etc.)?” and “How is each assessment weighted for grading purposes?” Validity of the questions was reviewed by content experts including PA educators. All questions were reviewed by three independent evaluators, their comments were synthesized, and revisions were made. After the revisions took place, the three evaluators looked at the questions again and no additional edits were made.

PROCEDURE

A grounded theory design of inquiry was used for this qualitative research study. The grounded theory process aided in identifying themes and categories to explain how programs evaluated their SCPEs along with their remediation practices.³ The use of the grounded theory approach allowed the researchers to find and identify core themes and categories from data collected from participants’ responses regarding assessment tools they used to evaluate SCPEs and their individual remediation practices.³

To obtain the information for the studies, calls were scheduled with program directors or their designees. The calls were

recorded and transcribed upon completion of the call. Data collection was continued until there was saturation of theoretical constructs, thus no new information was given to the researchers.

DATA ANALYSIS

Once the calls were complete, the data was analyzed using thematic analysis. The answers were initially categorized based on theoretical sorting and integrating into common themes.³ An excel spreadsheet was used to track the concepts and then the themes were patterned together. This allowed for succinct reporting of the most common forms of assessment tools programs use.³ Through this process, 6 major themes emerged that are discussed further.

Results

DEMOGRAPHIC DATA

A total of 12 program directors or their designees participated in the study and no additional subjects were recruited since data saturation was reached. The participants included three males and nine females. Five PA programs from the Northeast, one from the Northwest, four from the Southeast, and two from the Southwest were represented. Program cohort size varied from a low of 20 students to a high of 90 students with a mean of 43 students. Four programs were housed in a public institution while eight programs were within a private institution.

REQUIRED SUPERVISED CLINICAL PRACTICE EXPERIENCES (SCPEs)

Number of required SCPEs for the programs varied from a low of eight required rotations to a high of 11 required rotations with an average of 10. All participating programs required at least one SCPE in Family Medicine, Internal Medicine, Pediatrics, Women’s Health, Emergency Medicine, General Surgery, as well as an Elective SCPE. A SCPE in Behavioral Medicine/Psychiatry was required for 91.7% (11 of 12) of responding programs. In addition, some programs required second rotations in the categories listed above and two programs required Orthopedics. All programs required at least one elective SCPE and one program had a professional development elective. See Table 1 for SCPE rotation requirements.

Table 1. Number and Type of Required SCPEd

PROGRAM	HOW MANY SCPEs DOES YOUR PROGRAM REQUIRE?	WHAT SCPEs DO YOU SPECIFICALLY REQUIRE?
1	9	Family Medicine, Internal Medicine, Pediatrics, Women's Health, Emergency Medicine, General Surgery, Behavioral Medicine, 2 Electives
2	10	Family Medicine, Internal Medicine, Pediatrics, OB/GYN, Emergency Medicine, General Surgery, Mental Health, 2 Electives Professional Development
3	11	Family Medicine, Pediatrics, Women's Health, General Surgery, Psychiatry, Emergency Medicine, Internal Medicine 1, Internal Medicine 2, Elective, Elective, Elective
4	8	Women's Health, Pediatrics, Internal Medicine, Outpatient Medicine (Family), Emergency Medicine, Psychiatry, General Surgery, Elective
5	11	Emergency Medicine, Family Medicine I, Family Medicine II, Internal Medicine I, Internal Medicine II, Behavioral Medicine, Women's Health, Surgery, Orthopedics, Pediatrics, Elective
6	9	Family Medicine, Internal Medicine, General Surgery, Psychiatry, Pediatrics, Emergency Medicine, Women's Health, Elective, Elective
7	8	Family Medicine I, Family Medicine II, Internal Medicine, Pediatrics, General Surgery, Women's Health, Emergency Medicine, Directed (Elective)
8	9	Family Medicine, Internal Medicine, Women's Health, Behavioral Health, General Surgery, Emergency Medicine, Pediatrics, 2 Electives
9	11	Emergency Medicine I, Emergency Medicine II, Internal Medicine I, Internal Medicine II, Family Medicine I, Family Medicine II, Women's Health, Pediatrics, Surgery, Psychiatry, Elective
10	9	Family Medicine, Emergency Medicine, Internal Medicine, Pediatrics, Surgery, Women's Health, Orthopedics, Behavioral Medicine, Elective
11	10	Family Medicine, Emergency Medicine, Internal Medicine, Pediatrics, General Surgery, Women's Health, Behavioral Medicine, Primary Care, 2 Electives
12	11	Pediatrics, Emergency Medicine, Behavioral Medicine, Women's Health, Ambulatory Outpatient Medicine, Ambulatory Primary Care, Inpatient Hospital, Inpatient Other, General Surgery, Surgery Other, Elective

EVALUATION COMPONENTS OF SCPEs

Assessment tools used to evaluate SCPEs varied among programs, but there were a few clear themes. Table 2 identifies the assessment components of SCPEs along with assigned weights to them. Evaluation components common to all 12 programs included preceptor evaluations and an end of SCPE multiple choice exam with one program giving a multiple choice exam only for “core rotations.” Another program stated they did a “formative and summative evaluation from the preceptor.” Two programs had the students fill out evaluations about the “preceptor” and one of these two programs had the student

fill out a “site evaluation.” Three programs did a mid-rotation preceptor evaluation and one program did a “1 week check-in.” Six of the programs “logged” patient encounters. Three of the programs did some form of Objective Structured Clinical Examination or OSCE at the end of each SCPE. Three programs had students complete “H&Ps” and “SOAP notes.” Two of the programs had students take “Kaplan® quizzes” after each SCPE and two programs had students take “weekly quizzes.” Three programs required “reflection papers” after SCPEs. Two programs had students complete case presentations and one program had them do a “specialty note” along with a “pharmacology” assignment.

Table 2. SPCE Grading

PROGRAM	HOW IS EACH COMPONENT WEIGHTED FOR GRADING PURPOSES?	HOW DO YOU GRADE THE END OF SCPE EXAM?
1	End-SCPE preceptor evaluation 45%; PAEA EOR exam 45%; Other items 10%	Pass/Fail; Failure is greater than 1.5 SD below the national mean for that specific exam
2	EOR Exam 25%; Preceptor Evaluation 35%; Case Presentation 20%; H&P 10%; SOAP 10%;	Z score for 70%
3	Core rotations - EOR Exam 60%, Preceptor evaluation 40%; Elective rotations - Preceptor evaluation 70%, Other assignments (case studies, teaching modules) 30%; Every rotation - P/F high stakes quiz 10 questions and must get 10/10 (administered prior to EOR exam on post-rotation call back days)	Raw score is weighted using z score algorithm, convert the score and weight the exam
4	EOR Exams are worth 100 points in each Capstone course - the courses have 920 points with 100 of those as EOR exams - a student may take up to 3 exams in a semester (3/3/2 with an elective at one time during the year); EOR Exam "passed" gets 100% of points but if exam is remediated successfully then get 75% of points	Scaled scores graded in Capstone Assessment courses I, II, III - worth 100 points out of the 920 in the course; use passing as within 1 SD of the national mean
5	EOR exam is weighted the most with preceptor evaluation the second highest	Overall scores using z scores from PAEA at 1.5 SD this year
6	All the same weight; if counting their 5 components then 20% for each component	Scale with 70% considered passing. Use the national average scaled score and must be within 2 SD or not below 2 SD below mean
7	EOR Exam 50%; Preceptor Evaluation 30%; Assignments 20%	% grade calculated from PAEA scaled score converted back to percentile without other adjustments
8	Weekly quizzes 2.5%; PAEA EOR exams 35%; OSCE or oral presentation 15%; Specialty note 5%; Pharmacology assignment 2.5%; Preceptor evaluation 40%	Take scaled scores and perform historical look-up for score; no curve or changes
9	EOR Exam is based on program cut point; P/F components for 1 week check-in, Formative eval, Summative eval, Student eval, Online logging, and Kaplan test; for Summative evaluation by preceptor a score of less than 3 out of 5 is investigated	Z score with national data based on percentiles, program trended the data and developed cut-points for student performance
10	Preceptor Evaluation 10%; Faculty Observation with SP OSCE 25%; PAEA EOR Exam 60%; Assignment 5% or applied to OSCE	Z score
11	For 8 core rotations: Performance Evaluation 50%; PAEA EOR Exam 35%; Written Case Presentation 15%; For electives: Performance Evaluation 50% ; Elective Assignments 50% (oral case presentation, teaching project/surgical notes, reflective journal entries)	Take scaled scores and perform historical look-up for score; curve based on standard deviation
12	No weighting, must pass all components	70 as cut-off, conversion work out to a 70

WEIGHTING OF THE COMPONENTS OF SCPEs

Weighting of SCPE components also varied by program (Table 2), but many programs again shared some common constructs. The weighting of preceptor evaluation of the student varied from a low of 10% of the student's SCPE grade to a high of 50% of the student's SCPE grade. End of SCPE multiple choice exam weighting ranged from 25% to 60%. Most programs used a percentage system for each of the assessment components.

GRADING OF SCPEs

The following are the responses to the question, "How do you assign grades to your SCPE (ie letter, number or pass/fail)?"

Seven of the programs assign letter grades, two programs use a pass/fail designation, two programs have a satisfactory/unsatisfactory method, and one program has an honors, satisfactory or unsatisfactory system.

EXAM WEIGHTS FOR SCPEs

The approach to grading and weighting of end of SCPE exams was mixed, but using Z-scores or standard deviations were the most common methods of grading the exam. Weighting of the exam ranged from a low of 20% to a high of 60% with some programs using a cut score only. Table 2 gives the breakdown of weights and grades for programs.

REMEDICATION AND RETESTING POLICIES

Programs were also asked about remediation strategies for failed assessments during SCPEs and how they handled remediation if the student failed the entire SCPE. All programs remediated failed multiple choice exams and the remediation processes consisted of outlines, extra exam questions, and even a discussion on student studying habits. Nine of the programs gave a second multiple choice exam after the remediation process occurred. See Table 3 for more details. When asked about remediation for an entire SCPE, programs said their action plans depended on the situation. More than half of the programs (58%) would have the student repeat the clinical rotation if the student failed it. Table 3 gives a further explanation of the program SCPE remediation requirements.

Table 3. Remediation Practices

PROGRAM	HOW DO YOU REMEDIATE A FAILED END OF ROTATION EXAM?	HOW DO YOU REMEDIATE A FAILED SCPE?
1	If a student fails an EOR then repeat another exam version within 1 week.	Depends on individual case - option to remediate, decelerate, or dismiss
2	For a clinical student not on probation, failure of EOR exam results in a meeting with the Clinical Coordinator, a remediation action plan is developed and within 2 weeks the student retakes 1 exam; if the student passes the remediation exam then continues on, if fails remediation exam then repeat rotation and placed on probation	If preceptor evaluation is less than 70% then student repeats rotation; If a student fails a clinical assignment then the student remediates the assignment until passing at 70%
3	EOR exam failure then meeting with Clinical Director of Education to plan for remediation efforts and then retake EOR using another version	If needed then use an Elective slot to repeat a failed rotation
4	If a student fails an EOR, they will then take an ExamMaster exam that is developed by the program. The student reviews the questions and explains any incorrect answers to a program faculty	Clinical rotation skill/component not passed then remediate that skill/component
5	If a student fails an EOR exam then discuss weaknesses, make an outline, take another version of exam	Depends on reason - no remediation if academic failure; if professionalism remediation then repeat the rotation
6	If fail EOR then repeat with an alternate version - must repeat before next call back day	If fail SCPE then program committee meets to determine outcome - may have to repeat SCPE using elective time or may have to do other things; *Implementing self-reflective goals with 3 goals per rotation and then check at the end of the rotation to see that they met their goals
7	If <70% on EOR exam then remediation without retake of exam, print-out topic list and by Monday turn in paragraph description for each topic and then submit student habit plan to advisor	Need for this hasn't really happened yet, SCPEs are 5 credit hours each and students are allowed 9 credit hours of C total throughout program; if C on rotation then get an incomplete while re-doing the rotation and having one chance to earn an A or B
8	EOR exam failure then take task list of questions missed, research and write about topic with submission of that document	Typically repeat the rotation with an individual study plan approach to repeating the rotation, submit weekly updates and study plans throughout the repeat rotation
9	One opportunity to repeat; If only one failure then choose timing of one opportunity to repeat, if two failed then stopped from progression and taken off rotations to remediate prior to progression	Fail if P/F components failed or if preceptor evaluation failed then need to repeat the rotation
10	EOR exams that fall below a Z score of -1 will have to be remediated with the plan to do additional questions from PrepU and obtain a certain score for the questions assigned	Failure of course will result in a repeat of the rotation
11	EOR exams that are < 70% have one opportunity to remediate, the student reviews the results with the instructor and is given a week to study then is given the alternate version of the EOR exam and must pass that exam	Failure of the SCPE will result in one opportunity to repeat the rotation
12	Retest with other version; Internal Committee with External Members - Academic Success Remediation Team (ASRT)	Fail Preceptor Evaluation, then investigate; Remedial work, Repeat Rotation; one opportunity to remediate a course

Discussion

This was the first small study to take an in depth look at how programs are assessing and grading SCPEs. The research is difficult to conduct since programs are diverse in the composition of assessments in their SPCEs along with how the assessments are weighted. The present research is the start of a future project that can assist new and established programs to consider practices for SCPE assessments as they undergo decision making processes to assure that their own SCPE assessments, learning objectives, and instructional strategies are closely aligned.

There were some common assessment tools used across all programs. First, all 12 programs give some form of knowledge-based multiple choice exam, which is similar to the Morici study that found 90.5% required either a locally or nationally developed multiple choice exam at the completion of the SCPE.² The weight assigned to this form of assessment tool varied greatly, even within this small group. All 12 programs also required preceptor evaluations which were assigned different weights. Interestingly, only three programs did some form of an OSCE. OSCEs appear to be a popular form of assessment among medical education programs but in this study, they were not consistently used in every SCPE or potentially this information was missed and requires further elucidation. Research suggests that multiple types of assessment increase the reliability that programs are truly measuring the skill or knowledge level they are intending to measure.⁴ All programs in this study had multiple assessment tools, but care should be taken not to weigh one assessment method too heavily, as programs should try to make sure students have the knowledge, skills, professionalism, and competencies to enter practice.

All programs had remediation and retesting practices in place. The most common reassessment tool is a second exam administration after a failed end of SCPE multiple choice exam. The retesting was linked to a review of individualized material prior to taking the second exam. Remediation does require significant resources and time but can be a great benefit to the student. Guerrasio, Garrity, and Aagaard found that after 151 medical students, who were not achieving successful grades during medical school, residency, or post residency, went through an intensive remedial program, 90% of them became successful in achieving optimal grades and completing

the program. The overall mean face time was 18.8 hours of remediation per student, which suggests programs must factor in ample time and resources to help struggling students.⁵ While this may be time consuming, if it improves student outcomes, it is worth the time and resources.

LIMITATIONS

This was a small study with a limited number of programs. However, a qualitative methodology was used, and programs continued to be recruited until data saturation was reached. There may still be some missing components including how often OSCEs are administered or types of OSCEs utilized by programs. Quantifying the evaluation tools a program uses along with grading schemas is not an easy endeavor. Since percent weighting range greatly, a quantitative analysis becomes difficult to employ, which is why a qualitative study was used. While this study may be limited in size, it does give programs an idea of common themes and strategies colleagues are using to evaluate students during SCPEs.

Conclusion

While the study had a limited number of participants, it is one of few studies that attempted to identify how PA programs are evaluating SCPEs. It has been identified that programs are using multiple assessments including multiple choice exams, preceptor evaluations, and other assessment tools. This approach can help support the concept that a variety of assessments provides a better measure of knowledge (or skill). It has also been noted that different grading systems and weighting constructs within those systems are being utilized across programs.

There is still additional information to learn related to SCPE assessment, including the use of OSCEs or other skill assessments by programs. Ultimately, program faculty must make decisions about the appropriateness of SCPE assessment and the methodology of grade assignment that are most appropriate for their programs. The information learned through this qualitative study, however, does provide program faculty an opportunity to learn how other programs approach SCPE assessment, which may provide ideas for different approaches or affirmation that their approach is in line with other similar programs.

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