An Institutional Approach to Assist Program Directors and Coordinators With Meeting the Challenges of Graduate Medical Education

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Abstract

Objective To investigate whether a multimethod approach, including a new position dedicated to graduate medical education (GME) educator, online education modules, and program file audits, was associated with quality improvement in our residency programs.

Method Data related to GME audits, residency review committee citations and cycle lengths were entered into a database. We conducted statistical analyses and calculated effect sizes to explore whether these resources were associated with program quality, as measured by maintaining necessary program policies and files, implementation of multiple assessments, increased

residency review committee cycle lengths, and reductions in the number of citations.

Results The statistical analyses support the implementation of the GME educator, file audits, and online courses designed to improve the quality of residency education.

Conclusions The GME office will continue to conduct audits, develop online learning resources, and provide one-on-one communication between the GME educator and program coordinators and directors. Our approach could serve as a model for other institutions interested in enhancing institutional oversight and the quality of their programs.

Editor's Note: The online version of this article includes the program audit form.

Introduction

The Accreditation Council for Graduate Medical Education (ACGME) describes 6 competencies important to medical practice for articulating the skills, knowledge, and attitudes residents are expected to demonstrate.¹ Program directors and coordinators are expected to implement a competency-based program that provides residents with learning opportunities to enhance their competence and track progress via appropriate assessment methods. The ACGME also expects that programs will use data from these assessments to inform program development and improvement.

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Several resources are available to help prepare program directors and coordinators in addressing the challenges of a competency-based curriculum. The ACGME has provided several assessment methods for gathering evidence that residents are learning and can demonstrate proficiency in the core competencies.² Program directors and coordinators also rely on professional societies, the local graduate medical education office, and peers to assist with responsibilities for program and personnel skill development. The roles of program directors and coordinators are complex and combine administrative and educational tasks. Some institutions have developed ways to augment existing resources to help maximize program development. For example, the University of Arkansas for Medical Sciences developed the Educator, Administrator, Scholar, and Evaluator Program.³ The course includes sessions on interviewing prospective residents, designing a curriculum to ACGME standards, developing appropriate assessments, and conducting educational scholarship; this 10-session course was evaluated positively by coordinators and directors, who made changes in their education and administrative practice after completing the program.

An important issue in graduate medical education (GME) is investigating whether the educational environment is associated with program quality, which may set the stage for informed accreditation standards. Davis and Ringsted⁴ observed that the connection between

standards and program quality is problematic, which is further complicated when programs are judged from the different perspectives of faculty, residents, and ACGME residency review committees (RRCs). Residents may gauge program quality from the perspective of a “consumer” (eg, program coordinator responsiveness to residents’ feedback and requests), while faculty may focus on the program’s “process” (eg, aspects of the curriculum and the evaluation process).⁵ While scholarly activity may be considered important by some stakeholders, residents may not associate faculty research with program quality.⁶ The aim of our study is to examine whether there is an association between an institutional multimethod approach, which we developed to better prepare program directors and coordinators for their role in program development, and improvement and measures of quality, including both “process measures,” such as maintaining program policies and files, and “outcome measures,” such as RRC cycle length and the number of citations.

Background

West Virginia University has 38 ACGME-accredited programs with 319 residents and 51 fellows, supported by 37 program directors and 30 program coordinators. The School of Medicine’s GME office developed a 2-pronged approach to assist programs in meeting the challenges of a competency-based curriculum. First, we created the position of GME educator (nonphysician position), with the goal of advancing new and veteran coordinators’ ability to carry out their duties. The GME educator provides one-on-one training with coordinators to address electronic residency application service, accreditation data systems (WebADS), GME track, and related topics.

Annual Program Audit

The GME educator also contacts all program directors and coordinators to schedule an annual review. The audit form used for the annual review is provided as web-based supplemental material to this article. Several areas are targeted during the audits. The audits were created to address common citations received during past ACGME site visits. For example, some programs were cited for failing to compile the required documentation of residents who transfer from one residency program to another, which is now included in the audit review. The GME educator randomly selects 3 resident files for a thorough review, with 1 element being confirmation that the program director and coordinator are implementing multiple assessments to capture a broad and detailed picture of residents’ learning and development. The review also ensures that all residency documentation is included and organized (eg, Educational Commission for Foreign Medical Graduate [ECFMG] certifications, state licenses, evidence of resident scholarly activity). Programs also are expected to show proof that the

residents evaluate the faculty and that the program is evaluated annually by both residents and faculty. These audits and their results are separate from the required internal reviews, but available for inclusion in the data reviewed by the internal review team.

Educational Resources for Program Directors and Coordinators

The GME office also developed educational resources for program directors/coordinators. Taking advantage of our secure online learning environment, we created several learning modules. Senior medical educators developed the modules and used ACGME material and other educational resources, such as the Group on Educational Affairs’ initiative, *Approach to Conquering the Competencies Challenge*.⁷ The modules were critiqued and approved by the GME Task Force Committee, the executive subcommittee of the Graduate Medical Education Committee. Currently, there are 7 modules, including GME 101, Competencies 101, Competencies 102, Duty Hours 101, ECFMG and Visas, Site Visits, and the Match Process. GME 101, for example, introduces program directors and coordinators to the fundamentals of residency education, such as defining basic GME terms and acronyms that help new program coordinators and directors understand the common language associated with residency education. The module also familiarized program directors and coordinators with institutional policies, such as policies governing moonlighting. Completion of the program prepares directors and coordinators for their basic responsibilities.

The GME office posts frequently used GME forms and templates on a secure website. The templates were created to target areas of common program citations. The 2 most frequently used templates are a final summative evaluation to ensure that the programs incorporate the required language from the ACGME Common Program Requirements and an annual program review template that details the required materials that program directors must review during the annual program review. While all directors and coordinators are expected to complete the modules, participation does vary across programs. When the modules are completed, a certificate of completion is issued, which includes continuing medical education credit for physicians.

Study Hypothesis

The purpose of this study was to investigate the association between participation in these interventions and program quality. Specifically, we asked 2 questions.

1. Is there an association between the GME educator audits and organization of necessary files, the implementation of appropriate assessments and decrease in number of RRC citations and increase in RRC cycle lengths?

TABLE 1

MEANS, STANDARD DEVIATIONS, AND 1-WAY ANALYSIS OF VARIANCE (ANOVA) FOR EFFECTS OF AUDITS ON PERCENTAGES OF MISSING FILES AND ASSESSMENTS VARIABLES

Variable	Audit 1		Audit 2		Audit 3		ANOVA		
	Mean	SD	Mean	SD	Mean	SD	F	P	η_p^2
Missing Files	.21	.12	.14	.09	.12	.10	8.92	.001	.30
Missing Assessments	.46	.20	.25	.17	.31	.23	9.26	.001	.34

2. Is there an association between director and coordinator participation in the online educational modules and decrease in number of RRC citations and increase in RRC cycle lengths?

Method

Data related to GME audits and RRC citations and cycle lengths were collected and recorded in a GME office database. Two data items were collected for RRC citations: total number of citations and citations in areas addressed by the GME educator audits. Using audit implementation as an independent variable with 3 levels (first-year, second-year, and third-year audits) and percentages of missing files and assessments as dependent variables, we calculated separate 1-way repeated-measures analysis of variance (ANOVA). These analyses addressed whether program directors and coordinators responded to the first audit to include necessary files and assessments for future audits.

In addition, we analyzed whether the audits were associated with cycle length and RRC citations. A total of 27 programs had the same coordinator and director during this preaudit and postaudit analysis. Using the implementation of the audits as an independent variable with 2 levels (before and after the RRC visit) and RRC cycle lengths and citations that were specifically related to the audits as dependent variables, we calculated separate dependent *t* tests.

In addition, for the 34 programs that were reviewed by their respective RRCs during the study period, we monitored program directors' and coordinators' completion of the online learning modules after each program's most recent RRC visit. Program directors and program coordinators were categorized by modules completion performance. Nineteen program coordinators completed all 7 online modules (100%), while 15 coordinators failed to complete 1 or more modules (<100% completion). Eleven program directors completed 1 or more online modules and 23 program directors did not complete any modules. Using online modules completion groups as independent variables, and cycle lengths and total RRC citations as dependent variables, we conducted separate independent *t* tests for program directors and coordinators. Appropriate effect

sizes were calculated to ascertain a standardized measure of the magnitude of the observed effect.

Results

TABLE 1 displays the results of 1-way ANOVAs. The results show improvement in performance between the first and the third audit, with the mean percentage of missing files and missing assessments declining from 21% to 12% and 46% to 31%, respectively. There were statistically significant differences in program coordinators' compliance with file organization and assessment implementation across audits. Contrasts revealed that percentages of missing files ($F_{1,18} = 10.87$; $P < .05$) and assessments ($F_{1,19} = 28.22$; $P < .05$) were statistically significantly lower between the first and second audits. Eta-squared (η_p^2) is a measure of effect size. The calculated η_p^2 for files (.30) and assessments (.34) suggests there was a moderate statistical difference or "meaningful" relationship between audit implementation and missing percentages of files and assessment. No statistically significant contrasts were calculated between the second and third audits, suggesting that program coordinators responded after the first audit to include necessary files for each resident.

TABLE 2 presents the results of the dependent *t* tests. Means and standard deviations of the number of citations and the cycle length in years were calculated for RRC visits before an audit was conducted (preaudit) and after an audit was implemented (postaudit). There was a statistically significant difference in cycle lengths across programs before and after an audit was conducted. The 27 programs that were reviewed by their respective RRCs during this study received an average of 3.57 years in cycle length. After audits were conducted and programs were reviewed again by their respective RRCs, the average cycle length increased to an average of 4.4 years. A Cohen *d* value of .71 was calculated, suggesting that audits had a "meaningful" positive effect on cycle length.

Residency review committee citations were distinguished into 2 groups: total number of citations and those citations that are specifically addressed by the GME educator audits. There was no statistically significant difference in the average number of RRC citations that were specific to the audits before and after the GME educator

TABLE 2 PREAUDIT AND POSTAUDIT DIFFERENCES FOR RESIDENCY REVIEW COMMITTEE CYCLE LENGTHS AND NUMBER OF CITATIONS

Variable	Preaudit		Postaudit		df	t	d
	Mean	SD	Mean	SD			
Cycle length, y	3.57	1.18	4.37	1.11	26	−2.56 ^a	.71
No. of citations	1.00	1.36	1.27	1.18	26	−0.91	.21

^a $P < .05$.

audits. A closer examination of the data suggests that a mean of 1 for the number of citations across the programs left little room for statistical improvement, with the postaudit mean citation number increasing slightly to 1.27. These results also suggest that there were few RRC citations that were addressed specifically by the GME educator audits.

TABLE 3 presents the results of the independent samples t tests. While there were no statistically significant differences in cycle length or number of citations across the online learning modules completion groups, a moderate effect size (Cohen d) was calculated for differences in number of citations between program directors groups ($d = .43$) and differences in cycle length ($d = .40$) and number of citations ($d = .44$) between coordinator groups. The calculated effect sizes offer evidence of a “meaningful” relationship between the completion of the modules and increased cycle length and decreased number of citations. One of the limitations of statistical inference testing is that the results are associated with sample size. Future studies with higher sample sizes may identify a statistically significant difference. These results support the implementation of online learning modules, which may have a moderate effect on preparation for RRC visit.

Discussion

Our results suggest that the development of the GME educator position was worth the investment. The job functions of a nonphysician medical educator are diverse and may include assistance in implementing evaluation methods and designing faculty development initiatives, among others.⁸ The GME educator duties at our institution focus primarily on administrative tasks, such as conducting the audits to ensure that program directors organize residents’ assessment documentation, document policies appropriately, and conduct multiple assessments to collect evidence that residents are meeting learning expectations. Future studies may also explore how medical educators who have different responsibilities (eg, facilitating medical education research) could further contribute to the quality of residency education.

The completion of the learning modules is associated with fewer RRC citations and longer RRC cycle lengths. The GME office intends to develop additional training resources to address the core competencies. Augmenting these internal resources with established development sources may also be encouraged to better prepare program directors for their responsibilities. For example, our online modules may also lead directors to ACGME’s PowerPoint (Microsoft Corp, Redmond, WA) presentations titled

TABLE 3 DIFFERENCES FOR RESIDENCY REVIEW COMMITTEE CYCLE LENGTHS AND NUMBER OF CITATIONS ACROSS ONLINE COURSE COMPLETION GROUPS OF PROGRAM DIRECTORS AND COORDINATORS

Source	Variable	1 or More Online Courses Completed		No Online Courses Completed		df	t	d
		Mean	SD	Mean	SD			
Program directors	Cycle length, y	4.08	1.20	3.91	1.42	32	0.38	.14
	No. of citations	2.36	2.54	3.50	2.77	32	−1.14	.43
Source	Variable	100% Online Course Completion		<100% Online Course Completion		df	t	d
		Mean	SD	Mean	SD			
Program coordinators	Cycle length, y	4.30	1.19	3.81	1.30	32	1.11	.40
	No. of citations	2.45	2.58	3.66	2.71	32	−1.28	.44

Educating Physicians for the 21st Century.⁹ Encouraging completion of these learning resources will serve to communicate to program directors that their responsibilities require continuing education.

Our study has several limitations. It is an observational study of program directors and coordinators at a single institution, which limits its sample size and the ability to form generalizations from the results. Since program coordinators and directors were not randomly assigned for the completion of the online learning modules and the implementation of the audits, the results do not establish causality, but rather, only a relationship between variables. In addition, some programs may have improved their cycle lengths and lowered the number of citations without the benefit of the audits and the learning modules. This study did not account for certain variables (eg, the recent addition of RRCs with 6-year cycles, program coordinator motivation, and the amount of time devoted to prepare for a site visit), which may have also related to the results.

This study focused on “process” and external indications of program quality (maintenance of files and policies, RRC citations, and RRC cycle lengths). A few studies have explored the relationship between measures of GME program quality. Thrush et al¹⁰ found that residents’ overall perceptions of program quality were not associated with RRC cycle lengths. However, residents in programs with longer RRC cycles (ie, 4–5 years) commented more about the quality of faculty than did residents in programs with shorter RRC cycles (ie, 2–3 years). Future studies may move beyond “process measures” and focus on associations between efforts to improve program implementation and

learning outcomes. For example, studies can explore associations between program implementation and resident achievement on assessments designed to measure learning across core competencies. When applied at the institutional level, these investigations will help the GME office maximize the quality of its efforts to address the challenges of competency-based resident education.

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