Attitudes of Pulmonary and Critical Care Training Program Directors toward Quality Improvement Education

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Abstract

Rationale: Quality improvement (QI) is a required component of fellowship training in pulmonary, critical care, and sleep medicine. However, little is known about how training programs approach QI education.

Objectives: We sought to understand the perceptions of pulmonary, critical care, and sleep medicine training program directors toward QI education.

Methods: We developed and fielded an internet survey of pulmonary, critical care, and sleep medicine training program directors during 2013. Survey domains included program characteristics, the extent of trainee and faculty involvement in QI, attitudes toward QI education, and barriers to successful QI education in their programs.

Measurements and Main Results: A total of 75 program directors completed the survey (response rate = 45.2%).

Respondents represented both adult (n = 43, 57.3%) and pediatric (n = 32, 42.7%) programs. Although the majority of directors (n = 60, 80.0%) reported substantial fellow involvement in QI, only 19 (26.0%) reported having a formal QI education curriculum. QI education was primarily based around faculty mentoring (n = 46, 61.3%) and lectures (n = 38, 50.7%). Most directors agreed it is an important part of fellowship training (n = 63, 84.0%). However, fewer reported fellows were well integrated into ongoing QI activities (n = 45, 60.0%) or graduating fellows were capable of carrying out independent QI (n = 28, 50.7%). Key barriers to effective QI education included lack of qualified faculty, lack of interest among fellows, and lack of time.

Conclusions: Training program directors in pulmonary, critical care, and sleep medicine value QI education but face substantial challenges to integrating it into fellowship training.

Keywords: quality assurance; quality improvement; education

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Measuring and improving health care quality is an increasingly important part of modern medical practice (1). Given their central role in the health care system, physicians can and should play a key role in these efforts (2). However, many physicians

have been slow to participate in quality improvement (QI), in part because they lack the skills to do so (3). To address this problem, the United States Accreditation Council for Graduate Medical Education (ACGME) now requires physician trainees

to actively participate in QI and receive formal feedback on their quality of care during training (4).

The ACGME mandate is an important step toward ensuring that the next generation of physicians is capable of

Table 1. Respondent characteristics (n = 75)

Characteristic	Value
Program type	
Adult	43 (57.3)
Pediatrics	32 (42.7)
Discipline type	
Pulmonary/critical care	24 (32.0)
Pulmonary only	13 (17.3)
Neonatology	11 (14.7)
Pulmonary/critical care/sleep	9 (12.0)
Critical care only	8 (10.7)
Other	10 (13.3)
Duration, yr	
1	5 (6.7)
2	12 (16.0)
3	47 (62.7)
4	11 (14.7)
Total fellows in program	
Median [interquartile range]	7 [4–12]
Range	1–26
Training settings	
University-affiliated hospitals	68 (90.1)
Community hospitals	4 (5.3)
Both	3 (4.0)

All values are frequency (%) unless otherwise noted. Percentages may not add to 100 due to rounding.

measuring and improving their practice. Yet it is unclear if training programs possess the skills, experience, and expertise necessary to effectively teach QI to trainees. To better understand this issue, we surveyed training program directors about their perceptions and beliefs toward QI education as well as the ways they are implementing QI education in their programs. Focusing on training programs in pulmonary, critical care, and sleep medicine, our goal was to assess how training programs are approaching QI education, better understand the needs of training programs as they develop QI curricula, and determine if a standardized QI curriculum developed by a professional medical association would be of value.

Methods

Study Design

We performed an internet survey of training program directors in pulmonary, critical care, and sleep medicine during 2013. For the purposes of the study we defined QI as “systematic, data-driven efforts to improve the quality of clinical care” (1). To design the survey we first conducted unstructured interviews with a convenience sample of

five program directors to understand their general perceptions and attitudes toward QI, drafting the survey instrument based on their responses. We then piloted the instrument on eight adult and pediatric clinicians who were not training program directors, making revisions for readability and clarity based on their feedback.

The final survey contained 23 items addressing four domains: program characteristics, the extent of trainee and faculty involvement in QI, attitudes toward QI education, and barriers to successful QI education in their programs. Items related to program characteristics and the extent of trainee and faculty involvement in QI were framed as questions with categorical responses. Items related to attitudes and barriers were framed as statements with a five-item Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree). The complete survey instrument is available as an online supplement.

Survey Administration

The survey sample included training program directors in pulmonary, critical care, and sleep medicine. We obtained the list of program directors from the American

Thoracic Society’s electronic mailing lists of adult and pediatric pulmonary, critical care, and sleep training directors. We administered the survey using a commercially available survey tool (Verint, Melville, NY). The survey was prefaced by an invitation letter explaining the purpose of the study. We sent three e-mail invitations to each potential respondent, each approximately 2 weeks apart, during July and August 2013. We did not offer incentives for survey completion.

Analysis

The electronic mailing lists did not identify specific programs, and due to confidentiality concerns we did not ask respondents to name their program. Therefore, we analyzed responses at the level of the program director, not the program. Survey responses were analyzed as frequencies and percents. For items that used a Likert scale we categorized the responses as either agreement (strongly agree or agree) or nonagreement (all others) and present the results as frequency and percent in agreement. Data management and analysis were performed with Stata 12.1 (StataCorp, College Station, TX).

Table 2. Self-reported description of quality improvement education by pulmonary, critical care, and sleep training program directors (n = 75)

	Value
Percent of fellows participating in QI activities	
>75%	60 (80.0)
50–74%	7 (9.3)
25–49%	6 (8.0)
<25%	2 (2.7)
Nature of fellow participation	
Group activities	26 (34.7)
Fellow-led activities	15 (20.0)
Combination of group and fellow-led activities	33 (44.0)
Other	1 (1.3)
Fellowship uses a formal, written QI curriculum	19 (26.0)
Percent of faculty with formal QI training	
>75	2 (2.7)
50–74	5 (6.8)
25–49	13 (17.6)
<25	54 (73.0)
Types of educational activities*	
Faculty mentoring	46 (61.3)
Lectures by division or department faculty members	38 (50.7)
Lectures by nondivisional faculty members	27 (36)
Internet-based education	16 (21.3)
Assigned readings	14 (18.7)

Definition of abbreviation: QI = quality improvement.

All values are frequency (%) unless otherwise noted. Percentages may not add to 100 due to rounding.

*Educational types are not mutually exclusive.

Regulatory Review

This study used survey procedures to study educational strategies in an educational setting and was considered exempt from human subjects review under exemptions 1 and 2 of the U.S. Code of Federal Regulations.

Results

We received 75 analyzable responses from 166 potential respondents (response rate, 45.2%). Respondent characteristics are shown in Table 1. The majority of respondents represented adult programs (57.3%), programs of 3 years' duration (62.7%), and programs in University settings (90.1%). Programs represented all major disciplines, including pulmonary, critical care, and sleep medicine.

Trainee and faculty involvement in QI is shown in Table 2. In 89.3% of programs, the majority of fellows participated in QI. However, only 26.0% of program directors used formal QI curriculum. In 73.0% of programs, less than one-fourth of faculty had formal training in QI. The most common educational activities were faculty mentoring (61.3% of programs) and lectures by divisional or departmental faculty members (61.3% of programs).

Attitudes toward QI education and barriers to QI education are shown in Table 3. Although 84.0% of respondents agreed that QI was an important part of fellowship training, only 53.0% agreed that their fellows felt the same way. Only 48.0% agreed that faculty in their program were capable of providing QI education, and only 50.7% agreed that their graduating fellows were capable of carrying out independent QI. Lack of faculty expertise, lack of fellow interest, and lack of time were all endorsed as significant barriers to QI education. A total of 77.3% of respondents agreed that a QI curriculum developed by a professional society (the American Thoracic Society) would be useful in their program. Most respondents endorsed recorded lectures, reading lists, faculty training workshops, and internet-based education as key components of such a program (Figure 1).

Discussion

We found that although most pulmonary, critical care, and sleep fellowship program

Table 3. Attitudes and beliefs of pulmonary, critical care, and sleep training program directors toward quality improvement education

Statement	N (%) in Agreement
I feel that QI is an important part of fellowship training.	63 (84.0)
In general, fellows in my program feel that QI is an important part of their training.	40 (53.3)
Fellows in my program are well integrated into the ongoing QI activities of the hospital and clinical in which they train.	45 (60.0)
Fellows in my program are aware of their own performance on standard quality metrics.	23 (30.7)
In general, faculty in my program are capable of providing training in QI.	36 (48.0)
Fellows who graduate from my program are capable of carrying out their own independent QI projects.	38 (50.7)
Lack of faculty expertise in QI is a significant barrier to effective quality improvement education in my program.	38 (50.7)
Lack of interest among fellows is a significant barrier to effective QI education in my program.	28 (37.3)
Lack of time to meaningfully participate in a QI project is a significant barrier to QI education in my program.	36 (48.0)
A formal curriculum in QI and patient safety developed by the American Thoracic Society would be useful in my program.	58 (77.3)

Definition of abbreviation: QI = quality improvement.

directors value QI education, they face a substantial number of barriers to integrating QI into fellowship training. Major barriers include lack of qualified faculty, lack of interest among fellows, and lack of time for QI education. As a consequence of these, and possibly other, barriers, few program directors report having formal QI curricula, and only half of program directors report that their fellows are qualified to conduct independent QI on graduation.

Our results highlight a central tension surrounding the new ACGME requirements for QI education in fellowship training. Most practicing physicians did not receive

QI training as part of their medical education (3), and in turn many fellowship training programs lack the skills and experience to successfully instruct trainees in QI. Therefore, the new ACGME requirements create a situation whereby faculty members must teach a topic in which they themselves may lack expertise. To address this tension it is incumbent on the profession to develop scalable tools for QI education that do not rely on the expertise of local faculty, including but not limited to online educational curricula. Given that lack of faculty time and expertise were the highest ranked barriers, providing QI

Figure 1. Components of a successful quality improvement educational curriculum as perceived by pulmonary, critical care, and sleep training directors.

education curricula and other tools for educators may be the most important next step toward this goal. Indeed, a large majority of program directors agreed with the value of such tools. Although some online resources for QI education exist (5), these are not customized to pulmonary, critical, and sleep medicine and do not provide the dynamic interaction that is the hallmark of modern adult education (6, 7).

Our results also highlight the broader challenges facing QI in pulmonary, critical care, and sleep medicine. Successful QI is difficult and time consuming (8), yet physicians are under increasing pressure to incorporate QI into their daily practice (9). Quality measurement and reporting are required by most health care payers, including the U.S. Centers for Medicare and Medicaid Services (10). Moreover, participation in QI activities is now a requirement for maintenance of board certification in both medicine and pediatrics (11). We found that despite ACGME requirements, many fellows were not participating in QI, at least as judged by their program directors. Also of interest is that many fellowship directors doubted that their fellows were capable of QI on graduation, which may have implications for future QI activities in the field. Clearly a more holistic approach to QI education is needed, not only in graduate medical education but also in continuing medical

education. Such an approach might include QI “communities” based around clinical practice guidelines, registries, and shared tools for QI, similar to those created in cardiac care (12), surgical care (13), and cystic fibrosis (14). Professional societies such as the American Thoracic Society, perhaps partnering with patient groups, are well positioned to lead these efforts.

Our study has several limitations. First, we surveyed only program directors and not fellows or other program faculty. Thus, our results may not reflect the views of the entire academic pulmonary and critical care community. Second, we did not measure actual practice, only perceptions of practice, and we did not restrict the analysis to a single respondent at each program. Thus, our results may either underestimate or overestimate actual QI experience and educational patterns in training programs. Third, our response rate was only 45.2%. Although this response rate is on par with most other physician surveys (15), it is possible that respondents were either more enthusiastic or less enthusiastic about the value of QI education than nonrespondents, introducing systematic bias. Unfortunately, we do not have data on nonrespondents and are unable to determine if their characteristics differ from respondents.

In light of these limitations, more work is needed to better understand the true content and extent of QI education in

fellowship programs. For example, the field could survey the fellows themselves to understand their attitudes and perceptions as well as audit written curricula to determine the content of training. More broadly, the QI community as a whole needs to develop tools to assess physicians’ skills in performance improvement (16), not unlike existing tools to assess physicians’ skills in clinical care (17). Once developed, these tools can then be used to measure program effectiveness at QI education in a vein similar to the way we are now just measuring program effectiveness in clinical education (18).

Overall, this study provides an important window into QI education in U.S. pulmonary and critical care training programs, highlighting some important barriers programs are facing as they work to integrate QI education with clinical education. Given the essential role of QI in modern medicine, it is important that we develop strategies to overcome these barriers and ensure that future trainees possess the skills necessary to measure and improve quality in their daily practice. ■

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