

## ORIGINAL CONTRIBUTION

# Square pegs in round holes: How do pediatric emergency medicine fellowship program directors fit graduates of emergency medicine residencies into their programs?

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## Abstract

**Objective:** Pediatric emergency medicine (PEM) fellowship directors can interview candidates from either pediatric or EM residency programs. Currently, most candidates are pediatricians; however, because emergency physicians have attributes that could benefit PEM, our goal was to investigate facilitators and barriers to training more of them to become PEM physicians.

**Methods:** We surveyed U.S. PEM fellowship program directors (PDs) about their program's recruitment practices: Do they recruit only pediatricians or mostly pediatricians with an occasional emergency physician or do they actively recruit both? We solicited volunteers from each recruitment group for interviews. These were recorded, transcribed, and thematically coded using summative content analysis. Comments were cataloged into themes that were philosophical or logistic in nature and those that might facilitate (drivers) or serve as barriers (restrainers) to the inclusion of emergency physicians in PEM.

**Results:** We received 50 of 86 (58%) survey responses, 29 (34%) of whom volunteered for interviews. The 17 volunteers we selected for interviews generated 13 themes that fell into the four major theme categories: four philosophical drivers, three logistic drivers, two philosophical restrainers, and four logistic restrainers. Program groups differed with regard to the inclusion of emergency physicians. Most limiting were the impact of variable program length and the implicit belief that pediatricians are best suited to treat children. Most beneficial is the recognized value of EM graduates to the field of PEM.

**Conclusions:** While PDs acknowledged a growing need for PEM physicians, particularly in community hospitals, and that emergency physicians would contribute to PEM, they also identified the logistical burden of including them in programs primarily designed for pediatricians. This burden involves maintaining separate curricula for EM graduates and finding emergency physician faculty to serve as mentors. PDs

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also expressed a desire for resources to guide the integration of more emergency physicians into their programs.

#### KEYWORDS

curriculum, education, emergency medicine, fellowships and scholarships, graduate, medical, pediatric emergency medicine

## INTRODUCTION

The pediatric emergency medicine (PEM) profession has been experiencing workforce shortages, which are predicted to worsen in the future.<sup>1–5</sup> Additionally, studies have shown decreasing numbers of applicants to pediatric residency programs as well as decreasing numbers of pediatricians entering the field of PEM.<sup>1,2,6</sup> There has also been increased attention to the need for PEM physicians who work outside of freestanding pediatric hospitals to improve pediatric care in PEM deserts and promote pediatric readiness in general emergency departments (EDs).<sup>1,5,7</sup> Predicted shortages highlight the need to increase the number of trainees entering PEM fellowship and ultimately the number of PEM physicians.

In 1990, the American Board of Pediatrics (ABP) and the American Board of Emergency Medicine (ABEM) applied jointly to create the new subspecialty of PEM.<sup>1,8</sup> PEM fellowships were made available to either pediatricians (graduates of pediatric residency programs) or emergency physicians (graduates of emergency medicine [EM] residency programs). Pediatricians who complete PEM fellowships are certified by ABP, while emergency physicians who complete PEM fellowships are certified by ABEM.<sup>9</sup> The primary differences in certification requirements between the two boards is that the former requires a 3-year fellowship with 12 months of research experience, while the latter requires 2 years and does not require research.<sup>9</sup> As a result of these discrepancies, some PEM fellowships prefer to ease the administrative burden of maintaining separate programs for individuals with different training backgrounds by enrolling only pediatricians or enabling all fellows to fulfill program requirements in the same amount of time (3 years). As of the 2023–2024 academic year, there were 86 PEM fellowship programs, offering 207 fellowship positions annually.<sup>10,11</sup> Historically, PEM fellowship positions fill every year, with nearly all of those positions being filled by pediatricians.<sup>12</sup> In the 2023 fellowship match cycle, however, 16% of fellowship positions went unfilled.<sup>6</sup> Fellowship preference for training pediatricians is reflected in the current population of emergency physicians who have completed PEM fellowships and are certified in both EM and PEM. Of the current population of PEM physicians, there are currently only 333 emergency physicians who have completed a PEM fellowship and who are double board certified in EM and PEM, compared to 3493 pediatricians with subspecialty certification in PEM.<sup>1,13</sup> An article on the PEM workforce by Bennett et al.<sup>14</sup> provides contradictory numbers due to the fact that they classify the completion of a PEM fellowship as EM training.

The pending PEM workforce shortage suggests that PEM fellowships should strive to broaden their scope of qualified program candidates to include emergency physicians. Establishing an EM-to-PEM pipeline could help to alleviate workforce shortages but will be challenging for several reasons. First, from the trainee perspective, PEM fellowship requires additional years of training on the part of emergency physicians who are already qualified to treat children in a general ED. Second, emergency physicians would be delaying access to a full physician's salary during their additional years of training. Finally, the general perception of PEM as a profession dominated by pediatricians prevents emergency physicians from considering this field.<sup>15</sup> While these factors partially explain the low rates of EM trainees in PEM fellowships, no previous study has explored drivers and restraints to EM trainee inclusion from the PEM fellowship program director's (PD's) perspective. By understanding why and how some PEM fellowship programs have successfully recruited and trained emergency physicians, we can begin to develop insight into how to open the EM-to-PEM pipeline.

The primary purpose of this project was to identify drivers and restraints to the recruitment and inclusion of emergency physicians in PEM fellowship programs. A secondary purpose was to compare and contrast the perspectives of PEM fellowship directors who have consistently included emergency physicians in their programs to those who have not.

## METHODS

### Population and sampling

The population of interest were the PEM fellowship directors from any accredited fellowship as of December 1, 2022. Names and contact information for PEM fellowship directors were obtained through the Accreditation Council for Graduate Medical Education (ACGME) Accreditation Data System, the American Medical Association (AMA) FREIDA website, or individual institution's websites.<sup>10,11</sup> Appendix S1 contains a list of programs from which we recruited fellowship directors to be included in our population.

### Questionnaire development and implementation

The first stage of the study involved an author designed, nine-item questionnaire for gathering basic personal and program demographic

information from PEM fellowship directors (Appendix S2). The most important items on this questionnaire were designed to verify the program's primary sponsor (EM or pediatrics), determine the proportion of emergency physicians the program graduated over the previous 5 years, and determine the program's study category as a function of the types of fellowship candidates they recruit.

We disseminated the questionnaire through an electronic survey platform (Qualtrics) to the entire population of PEM fellowship PDs and made it available for 6 weeks. To help increase participation, reminders were sent every 2 weeks. This study was determined to be exempt from full review by The Ohio State University Institutional Review Board (#2023E0179). The last item on the survey invited participants to volunteer for a 30-minute structured interview to discuss personal opinions and formal organizational policies that either promote or prevent the inclusion of EM-trained physicians in their fellowship programs.

### Structured interview schedule

The second stage of the study involved a brief structured interview with PDs who volunteered to talk with the researchers about the involvement of emergency physicians in their fellowship programs (Appendix S3). From those who volunteered to participate in the structured interview, we strategically sampled and recruited individual PDs to represent each of the three program categories (A—Our program trains only graduates of pediatric residency programs; B—Our program will occasionally train graduates of EM residency programs but does not strategically seek them out; C—Our program trains graduates from EM residencies and strategically seeks EM graduates for our program).

Interview questions were designed through an iterative process specifically to identify the beliefs, policies, or organizational structures that promoted the inclusion of EM-trained physicians or prevented them from participating in PEM fellowships. The first draft of questions was customized for each program category by the two PEM authors (AR and JM). They were then reviewed by two research methodologist authors (CL and DW). To develop a logical flow and ensure that all salient topics were covered, the methodologists asked for revisions or justification for some interview items. The authorship team met twice to discuss and revise the interview schedules for each category. The interviews were not piloted nor were they adjusted once interviews started. Interview questions were considered either philosophical or practical in nature. The philosophical questions sought to ascertain whether the PD or their organization held beliefs that influenced their inclusion of emergency physicians, while the practical questions asked about the logistics involved with doing so. Both types of questions could be further cataloged into those that asked about philosophies or logistics that would serve to promote the inclusion of emergency physicians and those that would serve to prevent their inclusion. Given the status quo of the current PEM workforce, composed primarily of pediatricians, throughout the remainder of the paper, we refer to items that support the inclusion of emergency physicians in PEM as drivers and those that prevent their inclusion as restrainers.

We offered the volunteer interviewees the option of participating in the interview anonymously through scheduling by an independent third-party office associate who had no familiarity with individual fellowship directors. However, all participants declined the option of being interviewed anonymously. Two of the study authors (JMM and APR) conducted interviews during the summer of 2023 on the electronic meeting platform Zoom (Zoom Version 5.0, Zoom Video Communications Inc., 2020). In advance of the interview date, participants provided electronic consent to use their deidentified transcript for research and permission to record their interview. The platform recorded and transcribed the interviews. Zoom transcriptions were verified for accuracy and completeness by two of the researchers (JMM and MF). Once recordings were transcribed and verified for accuracy and completeness, all recordings were deleted.

### Data management and analysis

#### Quantitative (or survey) data

We used descriptive statistics to profile PEM programs and chi-square tests of association for bias analyses to determine whether there existed a response bias from key demographic groups, such as region of the United States or program sponsor (EM or pediatrics). All statistical analyses were performed using IBM-SPSS Version 29 (IBM Corp., Released 2022, IBM SPSS Statistics for Windows, Version 29.0).

#### Qualitative (or interview) data

We used a deductive thematic analysis (also called summative content analysis) for coding the structured interview transcripts.<sup>16-18</sup> The thematic coding involved using authors' (JMM and APR) knowledge and experience with PEM fellowships and PEM fellowship programs to develop a preliminary codebook. Using the preliminary codebook, all authors independently coded one transcript by assigning codes to key statements in the transcript. During this process, authors were instructed to highlight or list statements for which they could not identify matching codes. We then held a calibration meeting to discuss discrepancies or missing codes and revised the codebook by adding, merging, editing, or deleting codes (Appendix S4). To ensure that each transcript was coded independently by two coders, we used matrix sampling to assign each author transcripts to code using the revised codebook. One author (CL) collated coded transcripts and assigned those with discrepancies to a third coder for arbitration. The author team met one final time to review and coalesce around the final codes for each transcript.

Our analysis and data reporting adhered to the Consolidated Criteria for Reporting Qualitative Research.<sup>19</sup> Coded transcripts were entered into MAXQDA 2020 (VERBI software, Version 2020), a qualitative software package used to organize and process the coded transcripts into parent themes and subthemes. We assigned

codes to parent themes according to the nature of the interview questions, i.e., whether the question involved philosophy or logistics and whether the question involved drivers or restrainers for emergency physicians' involvement in PEM fellowships. This yielded four major categories: (1) philosophical drivers, (2) logistic drivers, (3) philosophical restrainers, and (4) logistic restrainers.

One author (CL) generated counts for the number of times a comment was observed for parent themes and subthemes within each major category. These counts were used to rank order themes and subthemes to prioritize their importance, produce graphical representations (histograms and pie charts) to aid interpretation, and reduce the data to its most meaningful essence.

We then compared the PDs from each of the three program categories on the number of times they commented on the remaining themes and subthemes. Using simple chi-squares (Fisher's exact tests for 2×2 tables) we compared the odd group (either lowest or highest) to the remaining two groups to provide a test of significance. Finally, we used a force field analysis framework to graphically present the insights we gleaned from PEM fellowship directors about the forces that would either drive or restrain changes that would result in the inclusion of more emergency physicians in the PEM profession (Table 1).<sup>20</sup>

## RESULTS

We received surveys from 50 of 86 (58%) PEM fellowship directors (Table 1), with 29 of 86 (34%) volunteering for structured interviews. We selected 17 volunteers (19.8%, 17 of 86) for interviews. Bias analyses confirmed that our sample of respondents was representative of the population regarding regions of the country and program sponsor. We selected individuals from each of the three categories for interviews. There were six interviewees from Group A (program trains only graduates of pediatric residency programs), seven from Group B (program will occasionally train graduates of EM residency programs but does not strategically seek them out), and four from Group C (program trains graduates from EM residencies and strategically seeks EM graduates). We asked directors about the length of the fellowship for candidates graduating from EM residency programs. Seventy percent (35 of 50) said they required 2 years for EM graduates, 10% (five of 50) required 3 years, and the remaining 20% (10 of 50) negotiated program length (either 2 or 3 years) with their candidates. PDs reported graduating an average number of 11.3 PEM physicians over a 5-year period ( $n=48$ , SD 7.0), with an average number of 1.1 or 11% of those originating from EM residency programs (Table 2).

## Qualitative results

The 17 interview transcripts resulted in 987 discrete comments that were assigned to the four major categories (philosophical drivers, 21%; philosophical restrainers, 24%; logistic drivers, 25%; and

**TABLE 1** Demographic profile of 86 PEM fellowship PDs representing respondents, nonrespondents, and totals.

	Respondents	Nonrespondents	Total
Region			
Central	13 (72.2)	5 (27.8)	18 (20.9)
Northeastern	17 (58.6)	12 (41.4)	29 (33.7)
Southern	10 (40.0)	15 (60.0)	25 (29.1)
Western	10 (71.4)	4 (28.6)	14 (16.3)
Total	50 (58.1)	36 (41.9)	86 (100)
Program sponsor	$\chi^2=5.9$ , $df=3$ , $p=0.12$ , $es=0.26$		
EM	14 (46.7)	16 (53.3)	30 (34.9)
Pediatrics	36 (64.3)	20 (35.7)	56 (65.1)
Total	50 (58.1)	36 (41.9)	86 (100)
$\chi^2=2.5$ , $df=1$ , $p=0.17$ , $es=0.17$			

Note: Percentages of respondents and nonrespondents are based on row totals, while total percentages are based on a total population of 86. Chi-square tests of association were used to check for representativeness of our survey respondents. Associated  $p$ -values and Cramer's V effect sizes for chi-square tests are presented.

Abbreviations: PD, program director; PEM, pediatric emergency medicine.

logistic restrainers, 30%). To reduce these original 987 comments to their most meaningful essence, we performed two steps. First, we sought a natural gap in each of the frequency distributions of the major subcategories (those with letters Ph or L followed by one number). These appear in Figure 1 and Table 3. Secondly, we worked our way down the rank ordered list of minor subcategories until we approximated the original 21–24–25–30 proportional distributions of items. This incorporated 72% (707 of 987) of the total comments. Parent themes with fewer than 30 comments and subthemes with fewer than nine comments were not included in the final results. After excluding parent themes and subthemes with smaller counts, we ended up with 13 parent themes; four from the philosophical driving forces (six subthemes), three logistic drivers (two subthemes), two philosophical restraining forces (six subthemes), and four logistic restraining forces (12 subthemes; Figure 1, Table 3, and Appendix S4). We observed a few differences across the three types of programs.

## Philosophical drivers

We derived four related parent themes associated with philosophies that would promote the inclusion of emergency physicians in PEM fellowships. Participants expressed a belief that the PEM

**TABLE 2** Program demographics of 50 PEM fellowship programs whose PDs responded to a short survey.

Number of total program graduates in 5 years (2018–2022)		
None	4	(8)
1–6	9	(18)
7–10	14	(28)
11–15	13	(26)
>15	10	(20)
<i>Total</i>	50	(100)
Mean ( $\pm$ SD)	11.14	( $\pm$ 6.9)
Mean ( $\pm$ SD) per year	2.23	( $\pm$ 1.4)
Number of emergency physician graduates in 5 years (2018–2022)		
None	26	(52)
1	13	(26)
2–3	5	(10)
4–5	5	(10)
>5	1	(2)
<i>Total</i>	50	(100)
Mean ( $\pm$ SD)	1.08	( $\pm$ 1.6)
Mean ( $\pm$ SD) per year	0.22	( $\pm$ 0.33)
Proportion of emergency physician graduates in 5 years 2018–2022		
0	26	(52)
5%–10%	11	(22)
11%–20%	4	(8)
21%–30%	3	(6)
>30%	6	(12)
<i>Total</i>	50	(100)
Mean ( $\pm$ SD)	11.7%	( $\pm$ 20.5%)
Number of programs by type		
A—Pediatricians only	8	(16)
B—Will train EM, but do not strategically recruit them	28	(56)
C—Will train EM and strategically recruits them	14	(28)
<i>Total</i>	50	(100)
Program length for emergency physicians		
Not applicable	3	(6)
2 years	36	(72)
3 years	5	(10)
Other		
• Emergency physician fellows may choose either a 2- or 3-year program	6	(12)
<i>Total</i>	50	(100)

Note: Data are reported as frequency (%).

Abbreviations: PD, program director; PEM, pediatric emergency medicine.

profession would benefit and thrive through the incorporation of EM into its core identity and using that philosophical realignment to drive the future of PEM fellowship education (Table 3). This process would start with the formal recognition of specialized skills and knowledge that emergency physicians bring to the specialty, which includes ultrasound for diagnostics and procedural guidance, acute care procedures, managing high-acuity patients, and applying triage and task prioritization knowledge and skills to manage the flow of an ED. Participants recognized projected shortages of PEM physicians in the future, which they believed could be alleviated through the deliberate inclusion of emergency physicians in PEM fellowships. Comments around this theme were shared equally across all three groups. Interestingly it was Group A, the group who traditionally did not take emergency physicians, who most frequently commented that training more emergency physicians in PEM would ultimately improve the care of children in general EDs, where 80% of children seek emergency care (Figure 2).

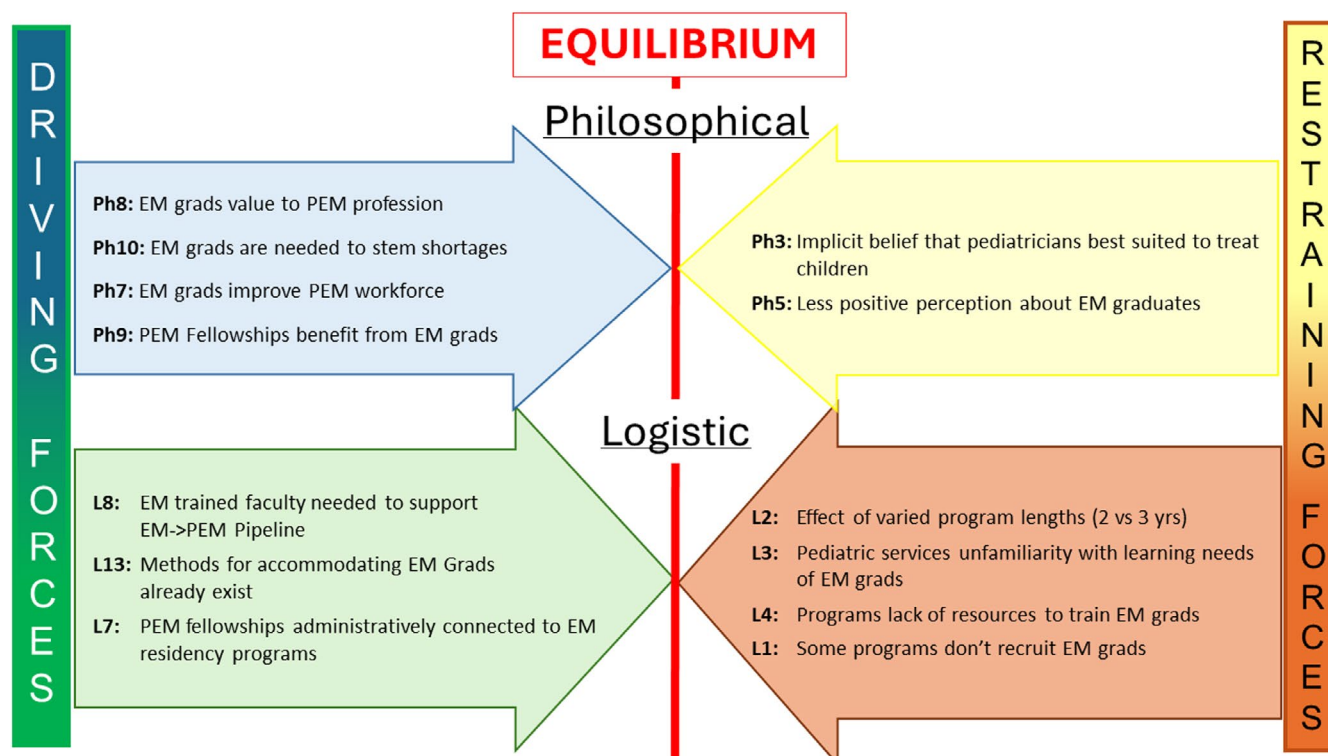
### Philosophical restrainers

We observed a general implicit theme indicating a belief that physicians trained as pediatricians were best suited for treating children in a pediatric ED. Participants often couched this belief using a variety of “other” reasons for why EM residency graduates were ill-suited for PEM fellowships but ultimately sought to preserve the status quo that PEM fellowships were only for pediatric trainees. Some of the most common reasons were attributed to the emergency physician candidates themselves, while others were attributed to qualities of their own program.

The first theme was typically stated like this: “Our program only desires candidates who want to pursue academic careers which includes interest in research.” Since EM residency programs lack uniformity in what satisfies resident research requirements, candidates coming from this background are perceived not to have the requisite skills to perform research during fellowship. Multiple PDs mentioned that they were more familiar with the reputation of the training that candidates from pediatric residency training programs received and felt that they were more accurately able to assess a candidate's commitment to an academic career due to familiarity with their residency research training and requirements. While research is not a certification requirement for EM-PEM candidates, numerous fellowships maintain this restriction. Significantly more PDs from Groups A and C compared to Group B made this statement ( $p=0.017$ ).

Another reason that PDs stated for not including EM residency graduates was that the program itself could not meet their educational needs. A higher percentage of PDs from Group B, who will occasionally train graduates of EM residency programs but do not strategically seek them out, made this type of statement (B—19% [nine of 47] vs. A—8% [four of 50] or C—0 [zero of nine];  $p=0.074$ ).





**FIGURE 1** Diagram of the philosophical and logistic driving and restraining forces on training EM residents in PEM fellowship. Driving forces are listed on the left side of the figure and restraining forces on the right. Philosophical parent themes are listed at the upper half of the figure and logistic themes on the lower half.

Finally, several PDs, particularly those from Group A, discussed how their program was challenged to identify and recruit qualified EM residency graduates (A—18% [nine of 50], B—4% [two of 47], C—11% [one of nine];  $p=0.063$ ).

A second theme involving emergency physicians' backgrounds was a generally less positive perception of EM residency graduates compared to graduates of pediatric residency programs. More specifically, PDs from Groups A and B expressed a belief that EM residency graduates have not mastered the pediatric content that pediatric graduates learn in their residencies and were unlikely to be able to master that content in a shortened, 2-year fellowship (A and B—45% [24 of 53] vs. C—0 [zero of four];  $p=NA$ ). They also indicated a belief that EM graduates who merely state an interest in gaining more pediatric experience as a reason to apply to PEM fellowships provided insufficient evidence of their dedication to children (A and B—23% [12 of 53] vs. C—0 zero of four];  $p=NA$ ).

### Logistic drivers

To support an EM-to-PEM pipeline, participants suggested that programs will need more EM-trained faculty to serve as role models and mentors for EM residency graduates who might be interested in PEM as a career. Further, they are needed to help adapt PEM programs for training EM residency graduates. Some PDs have already thought about how they might adapt their programs for

accommodating EM residency graduates. Those from Group A, who historically only train graduates of pediatric residencies, would do so by adding a third year of fellowship for EM residency graduates. Those from Groups B and C proposed dedicated educational tracks for accommodating them. Finally, several PDs suggested that PEM fellowships that had a physical or logistic organizational link to established EM residencies were best positioned to recruit and train emergency physicians in PEM.

### Logistic restrainers

The combination of the PEM program structure, the pediatric preparation of emergency physicians, and the discrepancy in program length requirements (2 years for EM vs. 3 years for PEM) served as the biggest challenges to including emergency physicians in PEM fellowships. PDs from Groups A and C were significantly more likely to suggest that it was the structure of PEM fellowship programs that made it difficult to include EM graduates (Groups A and C—11% [20 of 179] vs. B—4% [six of 140];  $p=0.037$ ). Furthermore, Groups A and C were also more likely to state that it was the varied program lengths required for EM- versus PEM-trained graduates and its effect on program administration that was a significant restrainer (Groups A and C—35% [62 of 179] vs. B—27% [38 of 140];  $p=0.007$ ).

Primarily as a consequence of differences in program length, scheduling was deemed a challenge by all three groups. Group B,

**TABLE 3** Parent themes and subthemes (with counts in parentheses) derived from interview transcripts of interviews with 17 PEM fellowship PDs.

Parent theme and subtheme codes (n)	Themes and subthemes	Exemplary quotes
Philosophical driving forces		
Ph8 (76)	PEM should be thought of as a specialized division of emergency medicine	
Ph8b (26)	PEM should recognize the strengths of EM-trained fellows and how they can contribute to the PEM specialty.	"EM grads already have really strong resuscitation and procedural skills, not to say that there isn't more skill to learn specifically for children. But I think that they're already starting fellowship with a really strong skill set. I think that in our adolescent and young adult population they really bring that expertise as they're critically thinking about those patients and thinking about more adult problems that we (as pediatricians) don't always think about." (Participant, Phenotype C)
Ph8b2 (15)	EM grads more adept at acute care procedures	
Ph8b3 (11)	EM grads better at managing ED flow, triage, and task prioritization	
Ph10 (45)	We recognize the general shortage of PEM physicians and recognize the need to recruit both EM and Peds graduates to achieve workforce goals	"I think what's actually needed is PEM expertise in community ERs. And our academic quaternary care centers are not focused on that. The criteria with which we score and evaluate applicants and the way we train them is very much based on understanding sick children in a quaternary center and producing academic scholarship. We haven't created PEM programs geared towards cultivating leaders who are going to move the needle in pediatric care in the community. We're still trying to make EM resident graduates fit our model of what PEM has traditionally been." (Participant, Phenotype A)
Ph10a (20)	Training more EM grads in PEM will improve care of children in general EDs	
Ph7 (43)	The specialty of PEM is enhanced or improved by the contribution of EM-trained participants	"I think there's so much benefit to having EM trained folks who are so skilled in resuscitation and critical procedures and ED management. It helps the culture of PEM breakdown stereotypes: Seeing EM as cowboys who are just interested in treat and street, and helps EM seeing PEM as cute pediatricians who don't really deal with sick people. It helps both sides see each other's lens and improves the culture overall." (Participant, Phenotype A)
Ph7a (12)	EM grads bring expertise in US, EMS, disaster medicine, department flow	
Ph9 (26)	The program benefits from the presence of EM trainees	"My favorite example is what happens in conference. I'll pick some very obvious topic, you know, PE evaluation, and everyone will turn and look at our EM trained folks and say, so, what would you guys do across the street? And then, when we're talking about some very pediatric specific topic, the EM folks will turn to their colleagues and say, well, what would you guys do with this? I love the fact that there's a peer-to-peer learning as well." (Participant, Phenotype B)

(Continues)

**TABLE 3** (Continued)

Parent theme and subtheme codes (n)	Themes and subthemes	Exemplary quotes
Ph9a (9)	Fellows teach each other	
Logistic driving forces		
L8 (60)	EM-trained faculty and other resources are available to help the program accommodate EM graduates	"I mean, really talking to people who have an EM background so they can highlight what is necessary and what might be best, I think is a lot of it. I found it helpful in the PEM program director group to hear the few EM trained people's opinions. And I've reached out to a couple of national leaders who are EM trained and got their thoughts on some of that." (Participant, Phenotype B)
L8a (15)	EM-trained PEM faculty are available to adapt PEM curriculum for EM trainees	
L13 (49)	Have already found a way to accommodate EM grads	"I think the biggest work came from the outpatient requirements. We really had to think about the 2 months of outpatient pediatrics. What does that entail? Probably a combination of gen peds, adolescent and subspecialty. They could just be an extra body there in those clinics, but in reality just the time of investing and getting key stakeholder buy-in for each of those rotations was a lot, and the paperwork was a lot. And then you have to think about the curriculum. Our educational curriculum has traditionally been on a three-year repeating curriculum based on core content months, so if someone's going to come in on a two-year cycle, they are obviously going to miss an entire year of content. So we actually had to redesign our core content curriculum to be in two-year blocks. It took a whole curriculum redesign for a didactic component as well." (Participant, Phenotype A)
L13b (13)	Dedicated educational track specifically for EM graduates	
L7 (33)	PEM fellowship program linked to an established EM training program	"I think our close affiliation with our adult colleagues, who are really in the same facility as us, and being a site for training residents from that program has really led to our ability to both recruit graduates from emergency medicine and have a better understanding and training environment." (Participant, Phenotype C)
Philosophical restraining forces		
Ph3 (106)	The philosophy that pediatricians are better suited to treat children is couched or coded in covert ways	"The biggest challenge is that EM graduates want to know Peds better. They don't necessarily want to do research. Most of them want to teach because most of them want to go to a community hospital so that they can be children's champions, but they don't really want to do research. But we require research because we feel like it's fair to all. If you're going to come to our program, then we're going to teach you what we're good at. If you choose never to use it again, that's fine. But that's what we want you to learn and it's supposed to be part of our program." (Participant, Phenotype C)
Ph3c (40)	Programs only desire fellows who pursue PEM academic career path (i.e., research)	



**TABLE 3** (Continued)

Parent theme and subtheme codes (n)		Themes and subthemes	Exemplary quotes
	Ph3a (13)	Program cannot meet the education needs of EM residency graduates	
	Ph3d (12)	Program is challenged to identify and recruit qualified EM residency graduates	
	Ph3f (9)	EM grads seeking more peds experience not sufficiently dedicated to children	
Ph5 (57)		General perception of EM residents in the pediatric ED is less positive than that of pediatric residents	<p>"I have to say the investment of the EM residents in the ED was very different. The EM residents often just weren't given as much responsibility or autonomy, and therefore they withdrew from being as involved or proactive, because they kind of felt like they were in a foreign country, when they went to the Children's Hospital." (Participant, Phenotype A)</p> <p>"Now, emergency medicine programs, they have to do X amount of peds so they have peds experience. It's just not a whole lot, you know. Our EM residents, you know, they get 6 weeks. Maybe, I can't remember. I may be wrong about it. It could be 2 months of Peds which is out of 36 months, really isn't a lot." (Participant, Phenotype B). Author note: Per ACGME requirements, EM residents in 3-year residency programs must spend 5 FTE months dedicated to the care of pediatric patients.</p>
	Ph5f (24)	PDs have higher expectations in self-reflection, focus, and motivation for EM grads	
	Ph5c (12)	Quantity of content from peds residencies is too vast for EM grads to learn in 2 years	
Logistic restraining forces			
L2 (100)	L2 (35)	Varied program lengths (2 years vs. 3 years) effect on administration	"You know, obviously, if we match somebody year one, then you're off, and you're 2, 2, and 2. You're basically off cycle forever. I still don't know how I feel about that. Honestly, like it really does throw things off. ... You have to feel like you have enough demand that you want to do the work to do it." (Participant, Phenotype A)
	L2a (19)	Inclusion of EM grads is strain on administrative resources (scheduling)	
	L2d (12)	EM grads are unable to meet research requirements due to 2-year timeline	
	L2e (9)	Inclusion of EM grads impacts funding for GME positions due to vacated third year	
	L2g (9)	Time for EM trainees to moonlight in order to keep up their adult skills is limited	
L3 (70)	L3 (25)	Pediatric services unfamiliarity with the learning needs of EM grads	

(Continues)

**TABLE 3** (Continued)

Parent theme and subtheme codes (n)		Themes and subthemes	Exemplary quotes
L3a (11)		EM grads participation in off-service peds rotations (NICU, PICU) may be challenged	
L3c (30)	L3c (3)	PEM and pediatric faculty are not adequately prepared to teach EM trainees, and therefore those trainees are treated differently in the peds ED and other learning environments	
	L3c4 (12)	Communicating EM grads training needs to other peds departments outside the ED is challenging	"Obviously, I have this, you know, come to Jesus talk with these people because they don't really understand why I'm sending an emergency medicine resident to the NICU or to PICU. So just recently, I finally got through to people and we changed the rotation in NICU, where he did NICU nights, and then he went on some deliveries and learned a ton and was well received, and he was respected. And it was a great situation. It's not always like that, because I feel like they don't always understand how talented EM folks are, and they could do more if they would just let them. So in PICU again it was better this year because I had a talk with the service chief about what my fellow could do and what I'd like them to do, and that if we don't train these people well we can't complain that community hospitals don't do the right thing for kids." (Participant, Phenotype C)
L4 (44)	L4 (17)	Programs lack resources to facilitate inclusion of EM grads	
	L4c (24)	Curriculum guidance is needed for standardizing both EM residencies and PEM Fellowships	
	L4c2 (13)	PEM fellowships require curriculum guidance in how to accommodate EM grads	
L1 (44)		Program does not actively recruit EM trained candidates	"One is just like, what is the push to do it to overcome it? What sort of activation energy? And I do think that the candidates have to be good enough that you want to do it." (Participant, Phenotype A)
	L1c (12)	Qualified EM grads are rare, hard to find	
	L1a (9)	EM grads are generally unaware of our specific PEM fellowship program	
	L1b (9)	EM grads are unaware of or uninterested in PEM as a viable career path	

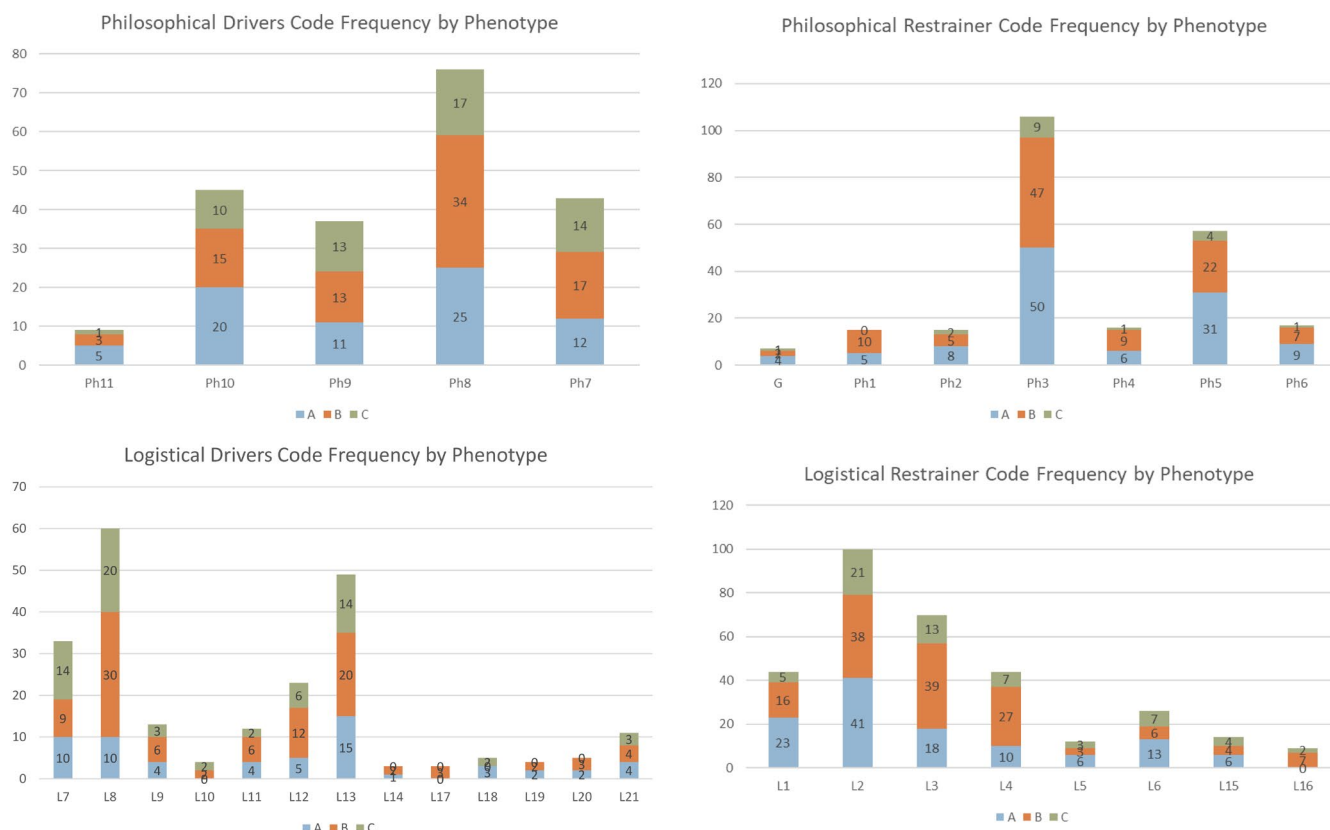
Note: Counts in Column 3 sum to counts in Column 2, which sum to counts in Column 1. Some codes did not meet the threshold of nine comments and are counted, but do not appear.

Abbreviations: PD, program director; PEM, pediatric emergency medicine.

however, was significantly more likely to suggest that it was the impact of scheduling on funding for GME positions that made it difficult to include EM graduates (Group B—13% [five of 38] vs. Groups A and C—6% [four of 62];  $p=0.015$ ), since one of their fellowship positions would be vacated after 2 years. A higher percentage (although not significant) of PDs from Group A proposed that it was the time constraints of their research requirement that

was a barrier to including EM graduates (Group A—17% [seven of 41], Group B—8% [three of 38], Group C—10% [two of 21];  $p=0.222$ ). Groups B and C more frequently mentioned concerns about the time available for EM residency graduates to moonlight to maintain their adult care skills.

PDs from Groups B and C were significantly more likely to raise the issue of practical differences between pediatric and EM



**FIGURE 2** Stacked bar graph of how frequently a code was applied in each of the program phenotypes. Phenotype A is listed in blue, Phenotype B is listed in orange, and Phenotype C is listed in green. These are then broken into the drivers and restrainers.

graduates that required the PEM fellowship curriculum to be adapted for EM residency graduates (Groups B and C—26% [52 of 202] vs. Group A—15% [18 of 117];  $p=0.035$ ). One common example was that emergency physicians lacked knowledge regarding the developmental milestones for children at varying stages of growth.

While all three groups expressed concerns about challenges with EM graduate's participation in off-service pediatric rotations such as NICU or PICU, Group C in particular, proposed that the training needs of EM graduates needed to be clearly communicated to pediatric departments outside of the ED (Group C—17% [five of 13] vs. Groups A and B—12% [seven of 57];  $p=0.039$ ).

Another common theme among participants had to do with lacking resources to support the improvement of pediatric education for EM residents and EM residency graduates who desire to become PEM physicians. This theme was significantly more likely to be made by members of Group B (Group B—19% [27 of 140] vs. Groups A and C—9% [17 of 179];  $p=0.014$ ). The proposed solutions to this problem universally offered by all three groups was making available curriculum guidance on better ways to accommodate EM residency graduates. Groups A and B also proposed the creation of a standardized pediatrics education curriculum for all EM residency programs to better prepare EM residency graduates for PEM fellowships or for treating children in general EDs.

A final theme that emerged from some PDs was the fact that they do not actively recruit EM residency graduates, because of how

hard it is to find ones that are qualified and because competition is strong for the few interested/qualified candidates available. Group A was significantly more likely to state that they do not actively recruit EM graduates (Group A—20% [23 of 117] and Groups B and C—10% [21 of 202];  $p=0.028$ ) and were also significantly more likely to complain that qualified EM residency graduates are rare and hard to identify (Group A—43% [10 of 23] and Groups B and C—10% [two of 21];  $p=0.017$ ). Complicating this notion was the fact that PEM PDs suggested that EM graduates are generally unaware of or uninterested in PEM as a viable career path.

## DISCUSSION

We observed little collective philosophical opposition to the inclusion of emergency physicians in PEM fellowship programs, even among those PDs who traditionally do not recruit or enroll EM residency graduates. Most PDs broadly recognized that PEM fellowships could benefit from the inclusion of emergency physicians or specifically itemized the skills they would contribute to the pediatric ED. We did, however, receive feedback about logistic issues that make including emergency physicians difficult for PEM PDs. Most of these issues were structural or administrative in nature. The shortened 2-year ABEM-eligible fellowship timeline enforced by the ACGME was noted frequently, along with the ABP research requirement or

their desire to produce academic PEM physicians overall. Logistic barriers also created perpetual cycles. For instance, programs need PEM physicians with EM backgrounds to support fellows with EM backgrounds. But because of structural issues, programs have difficulty attracting emergency physicians into PEM. Additionally, there was some degree of disconnect between the desire to have EM-PEM physicians and the willingness to train or “create” them. This conundrum must be solved collectively. A coordinated effort among PEM PDs to break these cycles will be required to modify the PEM workforce to include more emergency physicians. Also, an effort to encourage early career exposure to PEM in medical school may allow medical students to consider this pathway to PEM from an EM residency.

During interviews, PDs expressed interest in the prospect of training EM graduates. Program leaders frequently articulated what these candidates contribute to the field. Even when they had not trained these physicians in their program, they recognized EM-PEM physicians' ability to contribute to the field and the imperative to grow the PEM workforce given current trends. However, there was a mismatch in how willing programs were to break down the barriers or make the accommodations necessary to train individuals from EM residencies. While the ACGME requires all PEM programs to offer a 2-year fellowship track for EM-trained fellows,<sup>8</sup> some programs still offer only 3-year programs to all trainees, which discourages EM trainees from applying. Additionally, we reclassified five of 17 programs (29%), suggesting that some programs struggle to accurately assess which category they fall into and what messaging candidates receive from PDs' explicit or implicit commentary on emergency physicians pursuing PEM.

While rarely stated by PDs explicitly, we observed a strong implicit belief that pediatricians were simply more suited than EM doctors to be PEM physicians. This may also have impacted the willingness of Group A PDs to be interviewed as their philosophical stance is more explicit and, therefore, potentially more uncomfortable to discuss. The implicit bias was evident through the explanations of barriers such as lack of interest in academic careers, inability to learn enough pediatrics during the timeline available, outside services with a lack of familiarity with the type of trainee, and concerns around fulfilling research requirements. Much of the attention was on the programs' inability to meet the needs of these trainees rather than an explicit bias toward trainee factors. Knowledge regarding this finding will be helpful to overcome these barriers since programs have more control over themselves than they do over the trainees they recruit.

Enthusiasm toward change was projected in some interviews, particularly as PDs skewed toward more recent graduates. Overall members of the A group demonstrated a preference for a single-mold, one-size-fits-all curriculum, which is a challenge to contemporary learner-centered education models. The B group demonstrated a mixed willingness to bend the program to the needs of the trainee. The C group demonstrated a high degree of willingness to be flexible in creating a program focused on the trainee's needs. Programs, particularly those in the B category, need to wrestle with this implicit

bias and with an honest assessment of their group and institution's willingness to change. Programs will need to focus on modifying the restraining themes of the programs themselves, such as how to identify and recruit candidates, how to build mentorship or faculty networks, and how to become more learner centered by providing the specific education that emergency physicians need to become PEM physicians.

On the logistic side, barriers to change quickly overwhelmed facilitators. However, numerous PDs, particularly from the C group, shared solutions they have already implemented that could benefit all programs. Program PDs asked for guidance through more shared resources such as recommendations around scheduling, instructions for off-service rotations, and policies for moonlighting. Those PDs who have been able to navigate fluctuations in program size with their GME office could serve as a resource to others who struggle with this issue. PDs expressed a desire for programs who have EM-trained PEM faculty to provide a national network of support and mentorship of these individuals to programs who do not. This work has already been initiated by the AAP Section of Emergency Medicine and is ongoing. Some program leaders still viewed adding a third year of training for EM residency graduates as the best solution; however, not only is this solution not palatable to most EM graduates but it is also inconsistent with ACGME guidance and recognized as a deterrent to pediatric subspecialization as a whole.<sup>1,2</sup> A number of PDs suggested that the most productive approach would be to develop an explicit, standardized, 2-year curriculum that addresses the educational needs of emergency physicians to fill their knowledge gaps in general pediatrics content.<sup>1,2</sup> Perhaps the concept of 2-year, clinical-only tracks (without a research year) for pediatric subspecialization will eventually take hold, not only in PEM but for other subspecialties as well.

Emergency physicians interested in PEM face much confusion about the nature of fellowships and fellowship opportunities. For example, the way programs present themselves in the Electronic Residency Application Service, commonly known as ERAS, varies widely. For some programs, the EM or pediatrics designation is based on their home department rather than their program's orientation. For others, it is indicative of the type of applicant who should use that program identification number. In some cases, it indicates the only type of applicant who should apply to that program. Uniformity and clarity in how programs present themselves during the application process and in program designation would benefit both applicants and programs.

Findings from our study suggest that program history was not a good surrogate for the program's director's opinion about receptiveness of training EM graduates. Many PEM PDs seemed eager to accommodate emergency physicians but lacked guidance and resources to do so. Applicants should use caution presuming that because a program has not trained an EM graduate that they do not wish to or do not know how. And while some programs could navigate logistics more easily, there were, and likely will remain, programs that could make accommodations but choose not to.

Given workforce projections, there is urgency in systematically addressing the EM-to-PEM pathway to open the pipeline to training more EM residency graduates as PEM physicians<sup>1,5,15</sup>. Some programs and workforce analyses express desire to have more PEM physicians outside of academics, providing clinical care in community settings. This is a role for which EM-PEM physician may be uniquely suited. Programs should consider whether research and long-term academic career aspirations are required of an ideal fellow given these goals. Program leaders must be thoughtful and deliberate about leveraging EM-to-PEM physicians into workforce conversations. Additionally, candidates cannot be made to feel that programs are “settling” or filling spots that would otherwise go to pediatricians but rather need to feel sought after for the unique workforce contributions that they bring to the PEM profession.

## LIMITATIONS

Survey response was high but skewed toward those who already include or would like to include emergency physicians in their training programs. We did not have as many survey respondents who represented programs that do not train EM residency graduates. Another limitation was the likelihood that some PDs may be reluctant to discuss their true beliefs about recruiting and educating emergency physicians with interviewers (JMM and APR) known to be EM-trained PEM physicians.

## CONCLUSIONS

Pooled resources among programs will be essential for opening the emergency medicine-to-pediatric emergency medicine pipeline. A nationally accepted, 2-year, standardized, and transportable curriculum would be valuable, particularly to those seeking to incorporate emergency physicians into their programs. Honest reflection, accurate self-assessment, and transparent communication around a program's willingness to train emergency physicians benefits both the program and the trainee candidate, which will in turn support successful matches.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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