

EDUCATIONAL ADVANCE

Program Director Opinion on the Ideal Length of Residency Training in Emergency Medicine

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Abstract

Objective: This study sought to define expert opinion on the ideal length of training (LoT) for Accreditation Council of Graduate Medical Education (ACGME)-accredited emergency medicine (EM) residency programs.

Methods: A cross-sectional Web-based survey was sent to program directors (PDs) at all ACGME-accredited EM residency programs during a study period of August to October 2014. The primary outcome of ideal LoT was determined in two ways: 1) subjects provided the ideal total LoT in months and 2) then separately selected the type and number of rotations for an ideal EM residency curriculum by month, the sum of which provided an alternative measurement of their ideal LoT. We did not include vacation time. Descriptive statistics and an analysis of variance are reported.

Results: Response rate was 68.0% (108/159) with 72% of respondents (78/108) directing programs in the PGY 1–3 (36-month) format and 28% directing PGY 1–4 (48-month) programs. More than half of subjects (51.9%) have direct personal experience with both formats. When asked about ideal total LoT, PDs averaged 41.5 months ($n = 107$; $SD = 5.5$ months, range = 36–60 months). When asked to provide durations of individual clinical experiences for their ideal EM program, the sum total ($n = 104$) averaged 45.0 months. Results from a factorial analysis of variance revealed statistically significant effects of PDs' past training experiences: participants who trained in a 36-month program had statistically significantly lower LoT (mean = 39.2 months) than participants who trained in a 48-month program (mean = 44.5 months). There was also a statistically significant effect of current program format on ideal LoT: participants who directed a 36-month program had statistically significantly lower LoT (mean = 39.8 months) than participants who directed a 48-month program (mean = 45.8 months).

Conclusions: PD opinion on ideal LoT averages between 36 and 48 months, but is longer when the sum of desired clinical rotations is considered. While half of the respondents reported direct experience with both PGY 1–3 and PGY 1–4 training programs, opinions on ideal LoT through both methods corresponded strongly with the length of the program the PDs trained in and the format of the program they currently direct. PD opinions may be too biased by their own experiences to provide objective input on the ideal LoT for EM residency programs.

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Emergency medicine (EM) is one of the few specialties with two training formats approved by the Accreditation Council of Graduate Medical Education (ACGME). In 1987, the American Board of Emergency Medicine (ABEM) increased the minimum required length of training (LoT) for EM from 24 to 36 months. Since then, approximately 20%–25% of EM training programs have utilized a longer, 48-month

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format.^{1,2} Currently, the 36-month format (PGY 1–3) is used by 78% of residency programs and the 48-month format (PGY 1–4) is used by 22%.³

Several other specialties also have variable LoT approved by the ACGME. Surgical training programs range from 5 to 8 years in length, with options for integrated or independent training in plastic surgery, early specialization programs in vascular surgery, and embedded research years in some surgical programs.^{4–6} In 2004, due to concerns about board passage rates, duty hours, and the large volume of ACGME training requirements, family medicine educators proposed that the current 3-year training format for their specialty should be lengthened from 36 to 48 months.⁷ The ACGME has since approved a pilot study to examine ideal LoT for family medicine, with several intervention sites extending their family medicine residency programs to 4 years.⁸

There is no convincing evidence to support whether 36 months or 48 months represents the ideal LoT for EM. There is no significant difference in pass rates on the ABEM qualifying examination by graduates from 3- and 4-year programs. The ABEM in-training examination scores of PGY 3 and PGY 4 residents are grouped together in annual score reports.⁹ The Residency Review Committee for Emergency Medicine requires that PGY 1–4 training programs must “provide additional in-depth experience in areas related to emergency medicine, such as medical education, clinical- or laboratory-based research, or global health. An educational justification describing the additional educational goals and outcomes to be achieved by residents in the incremental 12 months of education must be submitted to the Review Committee.”¹⁰ The outcomes of this additional training have not been extensively studied. What existing literature exists shows conflicting results regarding LoT and career (e.g., fellowship, academics) selection.^{11,12}

Despite a lack of a published difference in outcomes between 36-month and 48-month EM training programs, strong advocates for both formats exist. Anecdotally, some programs report limiting LoT to 36 months because that is the amount of time eligible for maximal funding to be received by the sponsoring institution from the Centers for Medicare & Medicaid Services.¹³ Still, it is unclear why some institutions choose one LoT format over the other, as determinants of preferences in LoT by individual programs also has not been well studied. To better inform future considerations—including an outcomes based research agenda—of LoT in EM, we sought to elicit expert opinion on ideal LoT by using residency program directors (PDs) as our content experts.

METHODS

Study Design, Setting, and Population

This was a cross-sectional survey of EM residency PDs performed during a study period of August through October 2014. Our roster of eligible survey recipients was based on a list of ACGME-accredited, allopathic EM training programs as of August 2014, with contact information for PDs identified from a variety of sources

(e.g., SAEM Residency Directory, ACGME listings, CORD list serve). Participants were limited to PDs only; associate/assistant PDs were excluded to ensure responses represented the senior residency education expert for the program. Therefore, there was only one potential subject at each residency program. This study was reviewed by the University of Michigan institutional review board and given exempt status (HUM00088978).

Survey Methods and Analysis

No prior investigation aimed at measuring or deriving the ideal LoT exists in the literature; thus, there was no prior existing survey instruments on which to base this study. Accordingly, a Web-based survey tool was developed based on literature review and expert opinion. To optimize content and internal structure evidence, we created our survey instrument using an iterative editing approach. This included extensive testing amongst four authors—all experienced PDs in EM—for item generation, survey functionality, matching of item content to the construct, optimal item phrasing, and overall quality control. In instances where a high variability of answers was expected—e.g., subject responses to content, and duration, of all ideal rotations for an EM residency—a mix of suggested and open-response options with a wide window of rotation durations were provided to ensure capture of atypical responses.

The survey was piloted within the author group prior to full distribution. These pilot results were cross-checked for consistency, providing some evidence of response process validity. The survey was then sent by e-mail to all eligible participants using Qualtrics. Risks of participation in this survey study were explained in the corresponding solicitation letter and completion of the survey implied voluntary, informed consent. The survey was open for responses over a 10-week period, with targeted reminders sent to nonresponders twice. No individual identifying information was maintained.

Participants were asked several demographic questions, including the LoT of the residency program that they currently direct and the LoT of the program in which they trained. The primary outcome of PD opinion on ideal LoT was determined in two ways. PDs were first asked to provide the ideal LoT as a total number of months. They were then asked to provide the type and number of rotations they would include in an ideal EM residency curriculum, with responses in months. The sum of those individual responses were added together as a second method for determining ideal LoT. We did not explicitly ask participants to include vacation time in either of their estimations of LoT.

Data analysis using descriptive statistics was performed with Microsoft Excel 2010. Additional analyses were performed using SPSS version 21.0. We conducted a 2 (current program: 36 months vs. 48 months) × 2 (training program: 36 months vs. 48 months) factorial analysis of variance (ANOVA) on the ideal LoT variable. All analyses incorporated the finite population correction factor to the estimated standard errors.¹⁴ For purposes of this study, PGY 1–4 and the historical PGY 2–4 formats were considered together as 48-month training formats.

Outcomes

The primary outcome was PD opinion on ideal LoT for EM residency programs. We also solicited opinions about the relationship of some training outcomes to LoT (employment prospects, clinical ability of graduates, and adequacy of time to remediate residents).

RESULTS

The survey response rate was 68.0% (108/159). Of the 167 eligible subjects, eight were excluded from the total because either 1) we could not identify a valid e-mail address ($n = 6$) or 2) there was a leadership change in progress during the survey period without any identifiable program contact ($n = 2$).

Of the respondents, 72% (78/108) directed 3-year programs and 28% (30/108) directed 4-year programs; for comparison, 77% of ACGME-accredited programs had a 36-month format at the time of the survey.³ Regarding the format of the program at which the PDs completed their residency training, 54% (58/108) of respondents trained at a 36-month program, 43% (46/108) trained at a 48-month program (PGY 1–4 or PGY 2–4), and 4% (4/108) trained at a non-EM or 5-year EM/IM training. More than half of the respondents (51.9%) had direct personal experience with both training formats, either as a trainee or faculty member, and 24.1% (26/108) had leadership experience spanning both training formats.

PDs were first asked their opinion on an ideal LoT, which averaged to a mean LoT of 41.5 months (SD = 5.5, range = 36 to 60 months) among all respondents. Results from the factorial ANOVA revealed statistically significant effects of PD’s past training experiences ($F [1,101] = 30.9, p < 0.05$), and participants who trained in a 36-month program had statistically significantly lower LoT (mean = 39.2 months) than participants who trained in a 48-month program (mean = 44.5 months). There was also a statistically significant effect of current program format ($F[1,104] = 36.4, p < 0.05$) on ideal LoT, and participants who directed a 36-month program had statistically significantly lower LoT (mean = 39.8 months) than participants who directed a 48-month program (mean = 45.8 months).

Inspection of the cell means from the ANOVA (see Table 1) is instructive. For example, PDs who directed and trained in PGY 1–3 format programs provided the shortest ideal duration (mean = 38.9 months), whereas PDs who directed and trained in PGY 1–4 and 2–4 format programs provided the longest ideal duration (mean = 46.6 months). Those who train in a 3-year program and move to direct a 4-year program raise their ideal LoT by 2.1 months, from 38.9 to 42.0 months; whereas those who train in a 4-year program and move to direct a 3-year program reduce their ideal LoT by 4.6 months, from 46.6 to 42.0 months. PDs who trained in neither format (non-EM or EM/IM) were excluded from this analysis.

PDs were also asked to build their ideal EM program by listing the number of months necessary for various clinical rotations that are common in EM residency curricula. These responses were added together and averaged. In total, these curricula had a mean LoT of 44.7 months (SD = 10.5, range 19–111 months,

Table 1
Ideal LoT as a Function of Training Program and Current Program

Format of program where the PD trained	Format of Program that the PD Currently Directs	
	3-year	4-year
<i>Method 1: Direct query of ideal total LoT in months with overall mean LoT 41.5 months</i>		
3-year	Mean 38.9 Median 36 Range 36–60 SD 5.1 ($n = 52/104$)	Mean 42.0 Median 42 Range 36–48 SD 4.2 ($n = 5/104$)
4-year	Mean 42.0 Median 42 Range 36–48 SD 5.4 ($n = 21/104$)	Mean 46.6 Median 42 Range 42–48 SD 2.6 ($n = 25/104$)
<i>Method 2: Composite ideal LoT in months as the averaged sum of individual curricular components with overall mean LoT 44.7 months</i>		
3-year	Mean 38.9 Median 36 Range 19–111 SD 5.1 ($n = 52/104$)	Mean 46.8 Median 50.8 Range 32–55.4 SD 9.3 ($n = 5/104$)
4-year	Mean 44.3 Median 44 Range 34–58 SD 6.7 ($n = 21/104$)	Mean 51.5 Median 51.8 Range 39.8–68.8 SD 7.3 ($n = 25/104$)
LoT = length of training; PD = program director.		

median 42 months). Results are summarized in Table 1. Statistically significant differences ($p < 0.05$) were again observed between averaged responses of PDs of 36- and 48-month programs. Most of the difference comes from desired time spent training in EM (6.0 additional months from PDs of 48-month format programs) and elective time (1.1 additional months).

All PDs were asked about their level of agreement with statements reflecting common beliefs about of LoT, with response options ranging from 1 = “strongly disagree” to 5 “strongly agree” (see Data Supplement S1, available as supporting information in the online version of this paper, for the full survey). We conducted a series of independent-groups t-tests to examine differences between PDs who directed 3- and 4-year programs on beliefs about training programs. PDs who directed PGY 1–4 had statistically significantly higher levels of agreement than PGY 1–3 PDs with the belief that LoT: 1) affects the clinical ability of a graduate in their first year of practice (mean = 4.8 vs. 3.0, $t(105) = 7.1, p < 0.05$); 2) affects the clinical ability of a graduate 5 years after residency (mean = 3.6 vs. = 1.8, $t(106) = 9.9, p < 0.05$; and 3) affects employment opportunities immediately out of residency (mean = 4.6 vs. 2.7, $t(106) = 8.5, p < 0.05$). PDs who directed PGY 1–4 also had statistically significantly higher levels of agreement than PGY 1–3 PDs with the statement that 4) “Residents in my program have adequate time to remediate any deficiencies identified during training” (mean = 4.7 vs. = 3.7, $t(105) = 5.6, p < 0.05$). In addition, strong and

statistically significant positive correlations were observed between longer ideal LoT and 1) belief that LoT affects graduates' clinical ability ($r(105) = 0.52$, $p < 0.05$) and 2) belief that LoT affects graduates' employment opportunities ($r(105) = 0.62$, $p < 0.05$).

DISCUSSION

PD opinions on ideal LoT in EM directly correspond to their personal experiences as a trainee and the length of the program that they currently direct. This finding suggests that PD opinions might be too biased to provide any agreement on the ideal LoT for EM residency programs.

Our results indicate that past training experiences and current program format appear to strongly influence PD opinion on ideal LoT, with the latter having the greatest influence. When asked directly for the ideal LoT, the averaged response was 41.5 months, falling solidly between the two current formats of 36 and 48 months. In addition, those PDs whose training and program leadership experiences crossed formats looked very similar in their responses with a mean LoT of 42 months on direct query. In contrast, when asked for the number of months necessary for various clinical rotations in their ideal EM residency curricula, the sum of these components averaged 4 months longer. The mean for PDs currently directing 3-year programs total LoT was just under 39 months, suggesting that PDs of 3-year programs may prefer more time than is allowed by their current training format. In contrast, PDs whose current program is 4 years in length averaged 46.6 months on direct query and 51.5 by components in their responses, with higher levels of agreement that their residents have adequate time for remediation. We did not ask respondents to include vacation time in their estimation of ideal LoT; our results therefore underestimate the realistic total LoT necessary to account for vacation requirements. Adjusted results would include an additional 3 to 4 months of training time to include vacation.

There are multiple potential sources of significant bias in subjects' responses. Our investigation provides interesting insights into the impact of PD personal experiences on their opinion on ideal LoT. Over 50% of PDs in our study have professional experience with both 3- and 4-year training formats, either as a trainee or as a faculty member. Despite only 27% of PDs currently reporting leadership of a 4-year program, a much larger percentage of current PDs (40%) trained in a 4-year format. Subjects may demonstrate their preference for LoT in their employment decisions. PDs may choose to direct programs of a specific format because of a preexisting preference and not the other way around. Finally, it is likely that there are strong social (e.g., prior on-the-record statements, current residents, recruitment of future residents) and institutional (EM chief/chair, DIO, GME office, financial, etc.) pressures for PDs to support the format of the program they currently direct; this could be assessed in future studies.

As competency-based medical education (CBME) becomes the prevailing model, it is possible that conceptual constraints that bias PDs to think about training

in 1-year increments will be replaced by training paradigms that will allow individualizing ideal LoT based on skill acquisition and demonstration of competence. Ultimately the optimal LoT may not be universal, but instead may be different for each learner. Asking questions about the "ideal" LoT for a residency program ignores individual resident competency, as well as the overall movement in GME toward competency-based assessment and training. Currently, however, it is still the reality that all programs are a fixed length for all residents except in cases of remediation or prior GME training.

We believe that the resolution of the debate on EM LoT requires a defined research agenda that focuses on outcomes, not opinions, such as that proposed by family medicine in their own LoT evaluation.^{8,15} Such a research program should consider comprehensive measures such as milestone attainment, patient-centered outcomes, postgraduation employer assessment, measures of scholarship development, and career satisfaction. Finally, researchers should take into consideration the growing importance of CBME in determining optimal training duration.

LIMITATIONS

Our response rate was 68% of all subjects for whom we had contact information, or 64.7% of all PDs of ACGME-approved EM residencies. It is possible that this represents a sampling bias, as nonresponders may represent a population with unique answers. However, the actual PGY 3 and PGY 4 distribution of programs (77%/23%) and the distribution of respondents (72% PGY 3 and 28% PGY 4) is quite similar, suggesting that the sample is representative of the actual population.

As noted in the primary outcome, the mean total ideal LoT was 41.5 months; however, when subjects were asked to identify each component of an ideal training program, the combined LoT was 44.7 months. This can be interpreted as evidence against validity of the survey instrument. However, this discrepancy may also reinforce our finding of subject response bias. When a subject is asked for a single-number, total LoT, they most often chose an answer similar to their current training format. When asked to pick individual clinical experiences (e.g., EM, pediatric EM, anesthesia, orthopedics, surgery, OB), subjects were not easily able to reproduce their ideal EM clinical experience curriculum in terms of overall time. Without their specific consideration of the total sum length of time required for these experiences, they choose a longer mean duration of training.

There may be other factors that are associated with subject LoT preferences. We asked subjects for personal and current residency program demographics, as well as their own residency training format, their current training program's format, and any formats with which they have worked as faculty in any role. We did not quantify their time, or their specific role, as faculty in any of these positions. The amount of exposure to one training format or another could potentially influence their answers.

Finally, we did not investigate whether or not subjects had a preexisting format preference that informed

their employment decisions (as opposed to being a “blank slate” whose opinion is influenced by their current program format). While this would not implicate the current program format as the cause of the subject’s bias, it would nevertheless suggest that a bias was pre-existing and could preclude an objective assessment of ideal training format by the subject.

CONCLUSIONS

Program director opinion on ideal length of training averages between 36 and 48 months, but is longer when the sum of necessary clinical rotations is considered. While half of the respondents reported direct experience with both PGY 1–3 and PGY 1–4 training programs, opinions on ideal length of training largely corresponded to the length of the program the program directors currently direct. While our findings suggest that program directors’ expert opinion is intrinsically biased, our length of training averages were consistently above the current 36-month minimum training standard. Future considerations of ideal length of training in emergency medicine should reflect objective assessments of training outcome measures, not educator opinion.

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Supporting Information

The following supporting information is available in the online version of this paper:

Data Supplement S1. Default question block.