# Building the Future Curriculum for Emergency Medicine Residency Training

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## The Challenge

As the scope and practice of emergency medicine (EM) evolves, EM training must evolve too. The Accreditation Council for Graduate Medical Education (ACGME) charged a group with reimagining the ACGME Program Requirements for Graduate Medical Education in Emergency Medicine designed to structure residency training programs for the next 2 decades. With competency-based medical education reshaping graduate medical education, the training and assessment of EM residents must offer experiential and didactic learning that equips them with the knowledge, skills, and abilities needed for autonomous practice. In this report, we describe the process by which the EM Program Requirements Writing Group (PRWG) built the foundational residency curriculum to train EM physicians of the future.

## Our Approach

### Assessing the Current Landscape

The PRWG was composed of 8 EM physicians, including 1 EM resident, and 2 public members. All PRWG physicians previously or currently served on the EM Review Committee. The PRWG considered a broad array of inputs, including recommendations from a multiday facilitated strategic planning exercise, a summary of consultant-conducted background research,[1] and an EM stakeholder group.

The PRWG and the stakeholder group participated in a summit at the ACGME offices (see online supplementary data 1 for a list of the attendees). The stakeholder group provided insights into critical questions about the scope of EM training and what is required to prepare graduates for practice through the year 2050. The stakeholders were asked to consider 5 main topics: (1) specific skills, knowledge, and competencies; (2) experiences and resources; (3) relationships and interpersonal interactions; (4) procedures (how many and how they would be gained); and finally (5) length of training. Since updated program requirements (PRs) must align with, and advance, the ACGME mission to improve health care and population health, the PRWG encouraged stakeholders to provide input, free from constraints and biases inherent in the current EM PRs used by existing programs.

### Building the Curriculum

Stakeholder consensus converged around key domains, noting that new EM residency graduates often: (1) lack proficiency in efficient patient care (seeing multiple patients per hour); (2) lack understanding of administrative components needed for successful leadership in an emergency department (ED); (3) are less competent with common procedures seen in lower-acuity settings (eg, suturing, incision and drainage, fracture reduction); and (4) would benefit from additional training in pediatric emergency care. There was also a desire for more standardization by requiring rotations or structured experiences in areas already existing in many EM programs. These included: addiction medicine, administration, emergency medical services (EMS), obstetrics and gynecology (OB/GYN), toxicology, and point-of-care ultrasound (POCUS).

Stakeholders recognized that many EM programs are not based at major academic medical centers that utilize high-resourced EDs as their primary clinical sites. High-resourced EDs have readily available, in-house tertiary resources; diagnostic, therapeutic, and interventional capabilities; and consultants such that these facilities rarely transfer patients to other EDs providing higher levels of care. There was also consensus that residents need more experience in low-resourced EDs, defined as settings having limited diagnostic, therapeutic, and interventional capabilities, as well as limited consultants and specialty services. Given the varied locations of future practice for

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*The online supplementary data contains a list of stakeholder summit attendees and the survey used to inform this work.*

graduates, experience in both settings is required for comprehensive training. Without considering current PRs or any temporal constructs, the PRWG developed broad-based competencies and built a curriculum de novo that incorporated required rotations, structured experiences, and procedures that supported the newly created definition of the "future emergency medicine physician,"[1] while encouraging programs to provide unique experiences to meet program, institutional, and community needs.

Rotations are discrete identifiable periods of time when residents are engaged in learning experiences depicted on the block diagram. Rotations can be described in weeks, calendar months, or as a longitudinal experience that, when summed, equals the required rotation time. Structured experiences can be either a rotation or another identifiable experience such as a didactic series, real or simulated time caring for patients, or the completion of focused educational materials such as readings or modules. Given the move to competency-based medical education, the PRWG felt programs should consider knowledge and skill acquisition, maintenance of competency, and prevention of skill degradation in a curriculum that best fits their environment and available resources. Lastly, the PRWG recognized that programs may use twelve 1-month blocks or thirteen 4-week blocks. For the purpose of standardization, all required rotations were described in weeks with the understanding that 4.3 weeks would be equivalent to 1 month.

### Capturing the Community's Voice: Program Director Survey

In October 2024, the PRWG developed a program director (PD) survey to gather opinions about the minimum training requirements needed to prepare residents with the knowledge, skills, and behaviors necessary to enter autonomous practice. To optimize content validity, the survey was developed through an iterative process that incorporated feedback from a panel of experts, including members of the PRWG and a survey methodologist. Drawing on prior literature[2] and consensus discussions, the panel proposed 4 key areas to be addressed: (1) intensive care unit or critical care unit rotations, (2) additional experiences outside of EM rotations, (3) pediatric experiences outside of the ED, and (4) EM rotations. Respondents were also asked to estimate the total ED patient encounters (ie, individual patients cared for by the resident) necessary before an EM resident completes a training program.

The final web-based survey included 45 items administered through Qualtrics (survey provided as online supplementary data 2). Most items employed a visual analog response scale to elicit input on estimated rotation lengths, with a response of 0 available if PDs did not believe the rotation was required. No items asked respondents to calculate the optimal *overall* program duration; instead, the PRWG calculated this number after the survey was completed. This approach was intentional, as the panel sought estimates of required time for each rotation and experience rather than an estimate of the total training time. Previous research has shown that estimates of total training time are strongly related to program directors' current training formats and are thus prone to response bias.[2] To foster item clarity and respondent engagement, the survey incorporated evidence-informed design principles.[3]

Prior to administration, the instrument underwent pilot testing with 10 EM physicians who were current or prior members of the EM Review Committee and who had extensive experience in residency leadership. Feedback from the pilot test included responses to an open-ended question about the survey experience, as well as a post-administration focus group with the pilot sample. This feedback informed several minor revisions to better align the survey with respondent interpretations.

The survey was emailed to all 289 EM PDs listed in the ACGME's database. To ensure a single response from each program, participation was restricted to PDs. Initial notification about the survey was sent on November 26, 2024, followed by an initial invitation and 4 reminders; it closed on December 21, 2024.

Survey participation was voluntary, and responses were confidential. Data were exported from Qualtrics into Microsoft Excel 2013 for initial processing and then screened for accuracy, assessed for missing values, and evaluated for score distribution normality. Descriptive statistics were calculated using IBM SPSS Statistics 28.0. When calculating the mean overall rotation length estimate, 5 outliers (defined as >3 standard deviations above or below the mean) were excluded to improve data quality.

## Key Insights

Due to stakeholder consensus that pediatrics training was insufficient, the PRWG determined that the minimum time spent caring for pediatric patients would be 24 weeks, with at least half of that time in pediatric EM. They also concluded that required rotations in low-acuity settings, commonly referred to as "fast track," or "urgent care," were necessary for residents to manage the high patient volumes and perform procedures typically required for these patients. By having a required low-acuity EM rotation, programs could ensure residents are assigned where these procedures

are commonly occurring, eliminating the need to expand the list of required key index procedures.

There was consensus among the group that EM graduates should learn to work in EDs with varied resources and that new PRs must include dedicated time in both low- and high-resourced EDs. Programs that do not currently include participating sites that fall under these definitions would need to add at least one 4-week rotation of each.

The PRWG approached the issues of required ED volumes and minimum time in the ED from the perspective of accreditation. In other words, one way to ensure graduates would meet the required competencies was to have adequate resources available during training. When considering patient volume as an estimate of available resources, a sufficient number of ED patients, including critically ill and injured patients, should be available for each resident throughout training. When the aggregated annual critical care ED volume in all participating sites is less than 120 patients per approved resident, an additional month of critical care must be added.

The PRWG also considered the number of patient encounters that each resident would have during their training. The best available literature has shown that EM residents see approximately 1 new patient per hour (excluding sign-out) and work an average of 40 hours per week.[4,5] An EM resident who works 94 weeks (60% of the curriculum) in the ED over 3 years would see 3760 patients. This was felt to be insufficient as a minimum target, and a goal of 5000 patients over the course of training was considered instead. Based on the efficiency data above, a resident would require 125 weeks of training to meet this goal. Considering all of these values, the PRWG determined 5000 was the most reasonable target and thus chose 124 weeks as the minimum EM time (chosen to ensure all PRs were divisible into 4-week blocks). In addition to EM, pediatrics, and critical care rotations, the PRWG determined that a minimum of 2 weeks were necessary for rotations in administration, OB/GYN, EMS, and toxicology. It was felt that addiction medicine could be included in toxicology and additional time not be assigned.

Considering all of the proposed minimum curricular requirements, including vacation, the PRWG determined that a 3-year training program would not support the needs of future EM residents, necessitating a 4-year training format.

Other areas were deemed vital to training but could be provided as structured experiences (see TABLE 1). The designation of a structured experience gives programs autonomy over how training and assessment is built into their curricula; this allows incorporation of areas such as POCUS or ophthalmologic emergencies into curricula either longitudinally or as required block rotations, during didactics, or as structured modules or simulations, with assessment of competency performed in each program's individual setting.

## PD Survey Outcomes

Of 289 PDs, 173 completed the survey (response rate of 60%). Respondents represented both 3-year (n=138) and 4-year (n=34) programs, with one program length unreported. Response rates for 3- and 4-year programs were 59% (138 of 235) and 63% (34 of 54), respectively. Respondents provided estimates of the number of months necessary for the experiences listed in the survey (see TABLE 2). Summing these estimates (n=168, 5 outliers removed), the average total required training time for residents was 43.4 months (SD=10.8, median=42). The summed averages ranged from 41.6 months (SD=10.4, median=40) for 3-year program PDs to 50.7 months (SD=9.5, median=49) for 4-year program PDs. It is worth noting that all excluded outliers represented values above the mean, which, if retained, would have inflated the overall time estimates.

In response to the question about required patient encounters, 167 PDs estimated an average of 4676.6 encounters (SD=2188.8, median=4500): 3-year PDs estimated an average of 4350.7 encounters (SD=2067.5, median=4250), whereas 4-year PDs estimated an average of 6031.3 encounters (SD=2261.0, median=5500).

## Implications for EM Training

Historically, the length of EM training programs has varied, with 3-year formats (1-2-3) and 4-year formats both having long-standing support (1-2-3-4 and previously 2-3-4).[6] The 4-year format allowed programs to innovate and trainees to explore subspecialty areas and spend additional time honing patient care and leadership skills. In 2016, Hopson et al[2] asked PDs to estimate an ideal length of EM training, and PDs gave an overall average of 41.5 months, not including vacation time. The authors noted, however, that these estimates were strongly related to PDs' experiences with the format of their own training or current program. However, when asked to build the educational experience from its component parts, PDs built programs that were considerably longer (approximately 45 months, not including vacation time). Regardless of the method used, the overall mean estimates were more than what could be accommodated in the 3-year format.[2] The results of our survey were similar to these findings, with a mean overall length of training of 43.4 months (exclusive of vacation time). Our findings support the notion that most PDs, even

**TABLE 1**
Experiential Emergency Medicine Curriculum

| **Required Rotations in Weeks**<br>Rotations are discrete identifiable experiences depicted on the block diagram. One-month rotations can be 4 weeks, 1 calendar month, or a longitudinal experience that, when summed, is equal to the required rotation time. | | | | |
|---|---|---|---|---|
| **Emergency medicine (without BC faculty)** | **Emergency medicine (core)** | **Other pediatrics** | **Critical care** | **Other required rotations** |
| | **124 total** | **8 total** | **16 total[c]** | **8 total** |
| Low-resource ED[a]: 4 | | Other pediatrics[b]: 8 | Pediatric critical care: 4 | Obstetrics: 2 |
| | High-resource ED: 4 | | Adult critical care: 8 | Administration/QA: 2 |
| Low-acuity EM[a]: 8 | | | Other critical care: 4 | Toxicology/SUD: 2 |
| | Pediatric EM: 12 | | Low ED CC volume[c]: 4 | EMS: 2 |

| **Required Structured Experiences**<br>Structured experiences can be rotations or some other discretely identifiable experience such as a didactic series on a certain topic, real or simulation time spent caring for certain types of patients or clinical presentations, or the completion of focused educational materials such as readings or modules. | |
|---|---|
| 1. Acute psychiatric emergencies, de-escalation, restraint, suicide risk evaluation | 6. Performance of sensitive examinations |
| 2. Airway management: intubation, adjuncts, surgical airways, mechanical/noninvasive ventilation, ventilation monitoring | 7. Primary assessment/decision-making for conditions that employ multidisciplinary teams |
| 3. Non-laboratory diagnostics: EKG interpretation, radiology including POCUS | 8. Resuscitation as the team leader |
| 4. Observation medicine | 9. Telemedicine |
| 5. Ophthalmic evaluation: slit lamp, lateral canthotomy and cantholysis, IOP measurement, foreign body removal | 10. Transfer and transitions of care |

[a] Low-resource ED and low-acuity EM rotations that occur without ABEM/AOBEM certified supervising faculty are permitted but do not count toward the required 124 weeks of emergency medicine experience.
[b] Additional pediatric emergency care or pediatric critical care rotations count toward both the emergency medicine and critical care total weeks.
[c] When the aggregated annual critical care volumes in the program is less than 120 patients (low ED CC volume) per resident, an additional month of critical care must be added.
Abbreviations: BC, board certified; ED, emergency department; EM, emergency medicine; CC, critical care; QA, quality assurance; SUD, substance use disorder; EMS, emergency medical services; EKG, electrocardiogram; POCUS, point-of-care ultrasound; IOP, intraocular pressure; ABEM, American Board of Emergency Medicine; AOBEM, American Osteopathic Board of Emergency Medicine.

those who currently direct 3-year programs, estimate that more than 3 years is required to incorporate the essential components of EM training. Moreover, these results align with the minimum time requirements that the PRWG estimated when building the curriculum from scratch (43 months, inclusive of vacation time).

A comparison of the PD survey findings with the curriculum proposed by the PRWG revealed several areas of alignment and divergence. For example, both were aligned in what the required rotations must be as well as the minimum time for these rotations. There were several rotations that the respondents felt must be in the curriculum as rotations outside of the ED that were not included in the new PRs: ultrasound, adult anesthesia, trauma/acute care surgery, orthopedics, and electives. Of those, ultrasound, airway management, and orthopedics were included in the PRs as structured experiences, thus allowing programs to choose to have a rotation if they believed it would help their residents achieve competency or minimum procedure targets. Programs are also free to add whatever additional experience is desired until the 4-year curriculum is filled.

Several factors have changed since the Hopson et al[2] study, and it is important to keep them in mind. One major trend in residency programs is the decreased number and length of shifts in the EM resident schedules, resulting in less patient contact time overall. This was mostly due to emerging literature reporting that shorter shifts were better for patient safety, productivity, and physician wellness.[7-9] Literature also supports that residents prefer less time during their ED rotations, although consensus is lacking as to whether trainees prefer shorter shifts (if that calls for more shifts in the rotation) over fewer shifts. However, with fewer shifts and shorter shift lengths, residents are likely getting less patient contact time. For example, a program that changes its schedule from eighteen 12-hour shifts per month to eighteen 9-hour shifts per month will result in 25% less patient contact hours over the course of training. Two studies, published 10 years apart (2015 and

**TABLE 2**
Duration of Experiences in PRWG Curriculum Compared With Duration in Program Directors Survey Responses (Presented in 4-Week Increments)

| Experience | Proposed Curriculum | PD Survey (mean), n=168 |
|---|---|---|
| Emergency medicine[a] | Total EM=31.00 | Total EM=28.49 |
| | Low-resource ED=1.00 | General EM=22.62 |
| | High-resource ED=1.00 | |
| | Low-acuity EM=2.00 | Low-acuity EM=1.27 |
| | Pediatric EM=3.00 | Pediatric EM=4.60 |
| Administration[a] | 0.50 | 0.35 |
| Anesthesia[b] | 0.00 | 0.64 |
| Critical care (including PICU)[a] | 4.00 (+1.00)[c] | 5.30 |
| Electives | 0.00 | 1.65 |
| EMS (including disaster medicine)[a] | 0.50 | 0.60 |
| Obstetrics[a] | 0.50 | 0.73 |
| Orthopedics | 0.00 | 0.43 |
| Other pediatrics[a] | 2.00 | 0.37 |
| POCUS[b] | 0.00 | 0.93 |
| Quality/process improvement[b] | 0.00 | 0.43 |
| Toxicology (including addiction)[a] | 0.50 | 0.53 |
| Trauma (including ACS) | 0.00 | 1.04 |
| Other suggested experiences<br>Research/scholarship<br>Pain management<br>Palliative care<br>Critical care transport<br>Telemetry<br>Geriatric emergency medicine<br>Psychiatry<br>Internal medicine<br>Neurology | 0.00 | 1.90 |
| Vacation (4 weeks for each of 4 years) | 4.00 | 4.00 |
| **Total time in 4-week increments** | **43.00 (+1.00)[c]** | **47.39** |

[a] Required rotation in PRWG proposed requirements.
[b] Structured experience in PRWG proposed requirements.
[c] When the aggregated annual critical care volumes in the program is less than 120 patients (low ED CC volume) per resident, an additional month of critical care must be added.
Abbreviations: PRWG, Program Requirements Writing Group; PD, program director; EM, emergency medicine; ED, emergency department; PICU, pediatric intensive care unit; EMS, emergency medical services; POCUS, point-of-care ultrasound; ACS, American College of Surgeons.

2024),[4,5] revealed that EM residents work between 40 to 45 hours per week, with the most recent study[4] showing the most common shift length was 9 hours and the mean total shifts and hours worked per ED block were: 19 shifts and 185.1 hours (postgraduate year [PGY] 1), 18.2 shifts and 173.9 hours (PGY-2), 17.3 shifts and 163.6 hours (PGY-3), and 14.8 shifts and 157.2 hours (PGY-4). The true effect that fewer patient contact hours is having on residency training is unclear, but we are now seeing evidence from the American Board of Emergency Medicine[10] that in-training scores and first-time board pass rates have been steadily declining and that Milestone ratings of graduating residents are below the expected level 4 in many domains.[11]

## Final Thoughts

When taking into account all of the essential elements needed to train EM residents to meet future health care needs, there is clear consensus among surveyed EM PDs and members of the PRWG that the minimum training time for residents exceeds that which can be supported in 3 years, not including vacation time and other program mission-specific rotations. It is our belief that standardizing the training length to 4 years will afford all residents the opportunity to experience the breadth of EM required for the goal of enhancing health care and population health and attaining adequate patient contact time, all without sacrificing resident well-being.

## References


1. Accreditation Council for Graduate Medical Education. Shaping GME: The Future of Emergency Medicine Major Revisions to the Program Requirements for Emergency Medicine Summary of Themes and Insights. Published February 2023. Accessed January 13, 2025. https://www.acgme.org/globalassets/pfassets/reviewandcomment/emergencymedicinethemesinsights.pdf
2. Hopson L, Regan L, Gisondi MA, Cranford JA, Branzetti J. Program director opinion on the ideal length of residency training in emergency medicine. *Acad Emerg Med*. 2016;23(7):823-827. doi:10.1111/ACEM.12968
3. Artino AR Jr, La Rochelle JS, Dezee KJ, Gehlbach H. Developing questionnaires for educational research: AMEE guide no. 87. *Med Teach*. 2014;36(6):463-474. doi:10.3109/0142159x.2014.889814
4. Parsons M, Mannix A, Gore K, Rabalais J, Gottlieb M. The current landscape of emergency medicine resident scheduling. *AEM Educ Train*. 2024;8(1):e10926. doi:10.1002/AET2.10926
5. Stowell JR, Vohra TT, Luber SD. Emergency medicine resident clinical hours: a national survey. *J Emerg Med*. 2015;48(4):474-480.e4. doi:10.1016/J.JEMERMED.2014.11.005
6. Nelson LS, Calderon Y, Ankel FK, et al. American Board of Emergency Medicine Report on Residency and Fellowship Training Information (2021-2022). *Ann Emerg Med*. 2022;80(1):74-83.e8. doi:10.1016/J.ANNEMERGMED.2022.05.014
7. Hart A, Krall S. 220: Productivity: do 8-9 hour shifts make a difference? *Ann Emerg Med*. 2007;50(suppl 3):69-70. doi:10.1016/j.annemergmed.2007.06.372
8. Rischall ML, Chung AS, Tabatabai R, Doty C, Hart D. Emergency medicine resident shift work preferences: a comparison of resident scheduling preferences and recommended schedule design for shift workers. *AEM Educ Train*. 2018;2(3):229-235. doi:10.1002/AET2.10104
9. Mumma B, Coburn J, Coffman B. "Less burnout and more energy:" resident perspectives on the effects of emergency department shift length on wellness, education, and patient safety. *J Med Educ Train*. 2017;1:e003.
10. American Board of Emergency Medicine. 2024 ABEM Qualifying Examination Scores. Accessed January 13, 2025. https://www.abem.org/news/2024-abem-qualifying-examination-scores/
11. Gorgas DL, Joldersma KB, Ankel FK, Carter WA, Barton MA, Reisdorff EJ. Emergency medicine milestones final ratings are often subpar. *West J Emerg Med*. 2024;25(5):735-738. doi:10.5811/WESTJEM.18703



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