Residency Requirements and Guidelines

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A residency is the first step to becoming a board-certified anesthesiologist in the United States. This postgraduate training period is the essential period when the newly graduated medical student trains to be an independent practitioner and specifically focuses on specialty training. Although residency programs in the United States vary widely, they all share basic requirements and guidelines that are required by a governing body, the Accreditation Council for Graduate Medical Education (ACGME). It should be noted that ACGME requirements for anesthesiology residencies in the United States are ever changing and are subject to change at any moment.

ACGME Requirements

ACGME has shared requirements of all specialties, including anesthesiology. They define a residency as longitudinal learning experience in which the trainee develops the skills, knowledge, and attitude required to be proficient in the specialty of their choice. This is done by care of individual patients with supervision, assuring safe and effective patient care. Furthermore, there is graded and progressive responsibility, ensuring that by the end of their training, the trainee is able to enter the unsupervised practice of medicine. The ACGME has six core competencies in which residents are regularly evaluated upon: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and system-based practice. These core competencies have specific applications to training in anesthesiology, and these will be discussed below:

- Patient care: Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
- Medical knowledge: Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social behavioral sciences, as well as the application of this knowledge to patient care.
- Practice-based learning and improvement: Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning.
- Interpersonal and communication skills: Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.
- Professionalism: Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.
- System-based practice: Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Duty Hour Requirements

Duty hour requirements have recently changed and have an impact on both the individual resident as well as the structure of the residency program. First, there is a restriction of an 80 h workweek, which applies to all residents. Currently, postgraduate year (PGY)-1 residents are restricted to duty periods of 16 h, while PGY-2 residents and above are restricted to 24 h. Because of concerns of effective transitions in care,

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residents are allowed to remain on site past these limits in the name of patient safety; however, this time is limited to 4 h. In between duty periods, residents must have 8 h free of duty, although 10 h is suggested. In between periods of 24 h duty, residents must have 14 h free before their next shift. Also, residents must be scheduled for a minimum of 1 day free of duty per week (when averaged over 4 weeks); home call cannot be counted as a free day. These duty hours were revised and were effective starting July 2011.

Moonlighting (voluntary, compensated medically related work) during residency is allowed by the ACGME, although whether or not residents can participate in it is up to each individual program. It is essential that moonlighting must not interfere with the resident's education (as well as patient's safe-being), and the ACGME states that all moonlighting shifts must be granted individually by program directors. Many programs have guidelines on top of the ACGME moonlighting guidelines, often ensuring the resident is in good academic standing. Furthermore, the hours that the resident moonlights must be counted to all of the work hour limits, including the 80 h maximum weekly limit.

Clinical Anesthesia Years

Currently, anesthesia training is 3 years long; these years are often called the clinical anesthesia (CA) years (Fig. 57.1). However, the ACGME requires that before beginning the clinical anesthesia training, trainees complete a 1-year internship for a total of 4 years of training. In the past, this intern year was almost always separate and in the fields of either surgery or medicine. However, more recently, the ACGME has encouraged anesthesiology residency programs to incorporate a clinical base year into the structure of the residency, to increase the continuity of education. Although this is not a requirement, the majority of available positions in the United States include the clinical base year (841 of the 1404 available positions in the 2011 match). Clearly, the trend of anesthesiology training is to incorporate this intern year into the continuum of the anesthesiology training.

Throughout the clinical anesthesia years, there are *mandatory rotations* residents must complete throughout their residency. These include mandatory rotations through surgical anesthesia, critical care medicine, and pain medicine. The

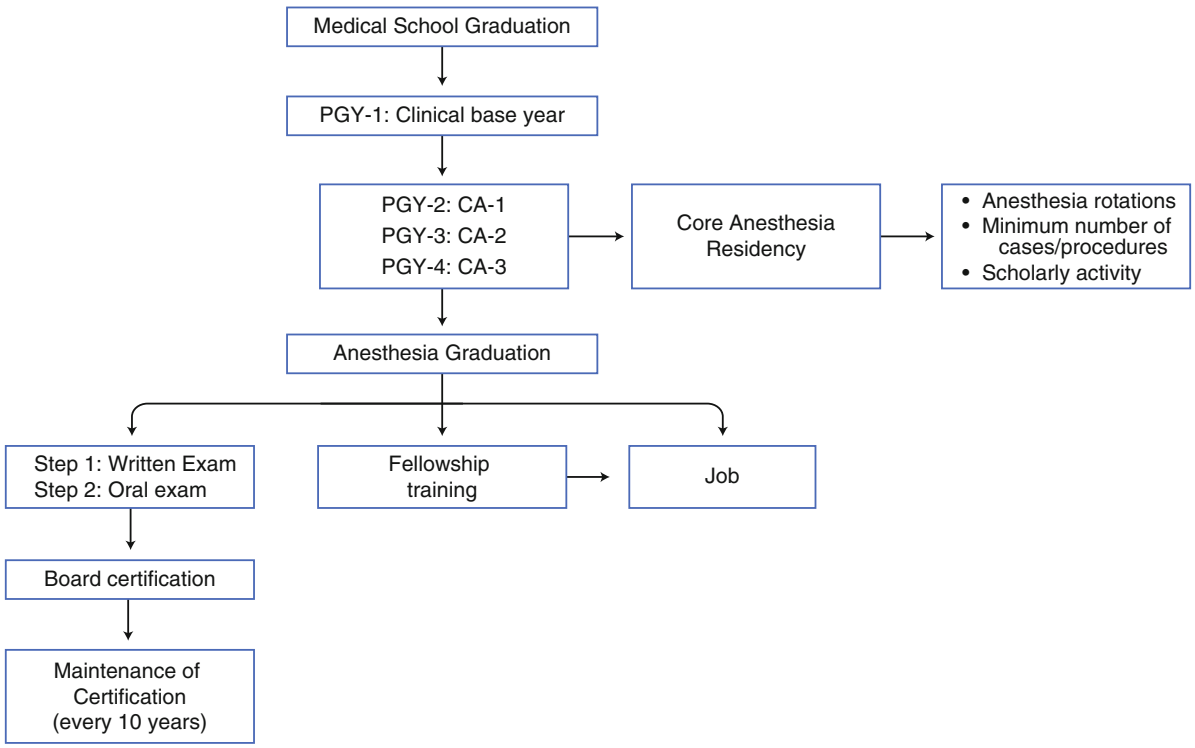

Fig. 57.1 Career pathway of an anesthesiologist. *PGY* postgraduate year, *CA* clinical anesthesia year

Table 57.1 Minimum case/procedure requirements during anesthesia residency

Case/procedure	Minimum number
Vaginal delivery	40
Cesarean sections	20
Cardiac surgery	20
Vascular	20
Intrathoracic (noncardiac)	20
Intracerebral	20
Epidurals	40
Spinals	40
Complex	20
PNBs	40
Pain evaluations	20
Age < 12 y/o	100
Age < 3 y/o	20
Age < 3 m/o	5

surgical subspecialty rotations must include rotations through obstetric anesthesia, neuroanesthesia, cardiothoracic anesthesia, and pediatric anesthesia. If the resident satisfactorily completes his or her rotation through a specialty, they can continue to do subspecialty rotations, although the cumulative time that can be spent in one subspecialty cannot be more than 6 months. Also, these subspecialty rotations must show increased responsibility and learning opportunities.

Residents must also rotate through other *perioperative rotations*, which include post-anesthesia care unit, pain management, and preoperative evaluation. Of the three mandatory months of pain management, 1 month may be spent in chronic pain, another month in regional pain management, and a last in acute perioperative pain management. Although the vast majority of these subspecialty rotations must be completed during the 36-month clinical anesthesia rotation, a total of 2 months of critical care and 1 month of pain medicine can be completed during the clinical base year.

Residents are also required to obtain *minimum number of certain cases* to ensure they see a variety of patients during their residency. These include both specific case types, as well as procedures (Table 57.1). There are stated case minimums for cardiac surgery, noncardiac thoracic surgery, vascular surgery, and intracranial surgery. Also, residents must show that they are involved with patients undergoing vaginal and cesarean deliveries (including high-risk obstetrics). A minimum number of spinal and epidural are required as well, as are a minimum number of peripheral nerve blocks performed. Also, there must be evidence of pain evaluations (separate from a nerve block) for patients who are suffering from either acute or chronic pain. It must be documented that patients with complex, life-threatening injuries, such as trauma or burn patients, must also be treated by anesthesiology residents during their training. Finally, to ensure that the resident has cared for an adequate number of pediatric patients, there are minimums based on patient's age.

Performance Evaluations

Continuous evaluation of *resident performance* is another requirement of residency, anesthesiology, as well as other specialties. The ACGME requires that the residency program provide objective assessments on resident performance in all six core competencies. This is done mainly through faculty evaluation but should include other evaluators, including patients, peers, and other professional staff. These evaluations do not only have to show adequate performance but also document progression in performance throughout the resident's training. Although evaluation is continually occurring throughout the residency, semiannual meetings with the program director are required in order to formally document performance to the resident and provide feedback.

There is also mandatory *evaluation for faculty and program* by the resident. This ensures that there is resident input on the quality of the teaching within the program. Evaluation is confidential, which ensures that residents can be honest about faculty performance. The evaluations should include not only teaching abilities but also professionalism, knowledge, and scholarly activities. The program also has an annual, formal assessment by their residents in the form of a survey. Again, this review is confidential and ensures that many of the ACGME guidelines for residencies are being followed.

Scholarly Activities

Another mandatory step to completing a residency is participation in *scholarly activity*. These academic projects must be supported by the program, including educational resources and ample opportunities for resident involvement in these projects. There are many different types of projects that can qualify, including book chapters, grand rounds presentations, or writing review articles. Also, clinical or laboratory research would also qualify as scholarly activity, and the resident is encouraged to present at meetings and publish results in peer-reviewed journals. Regardless of the type of activity chosen, a faculty supervisor must act as a mentor.

A structured *education program* is also provided during the residency. This includes a structured didactic program. The ACGME does not dictate how often didactics must occur, and because of this, there is a lot of variability in the structure and time commitment residencies give to their didactic programs. When choosing a residency, this is a very important factor to evaluate. The didactic programs include

lectures on the basics of anesthesia and all of specialties within its scope. Also, there should be lectures that focus on practice management, such as OR management, contract negotiations, billing, liability, and legislative issues.

Most residents are required to take the Step 1 computer-based annual in-training examination administered by the American Board of Anesthesiology (ABA). After graduating from residency, to become ABA certified, one has to pass the Step 1 examination and an oral clinical examination.

Fellowship Training

An extension of residency training is fellowship training. After completion of a residency, a newly graduated anesthesiologist may choose to continue their training by completing a fellowship in a subspecialty of anesthesia. Most fellowships are 12 months in length, although some that incorporate research may be longer. Almost all anesthesia subspecialties have available fellowships. However, there are only a few that are ACGME certified; these include pediatric anesthesiology, cardiothoracic anesthesiology, pain medicine, critical care medicine, and, most recently, obstetric anesthesiology. However, non-ACGME-approved fellowships are available in neurosurgical anesthesiology, regional/acute pain, ambulatory anesthesiology, thoracic anesthesiology, trauma anesthesiology, and transplant anesthesiology, among others. Regardless of the field chosen, this extra year strengthens a candidate in the job market, particularly if he or she is looking to work in the academic setting.

Overall, residency is a time when a physician truly learns medicine. When a candidate is selecting a residency program, he or she should match their own personality, learning styles, and career goals with a residency program. With 131 residency programs (and counting), there is sure to be a program that will suit each and every medical student preparing for a career in anesthesiology. However, the candidate must be aware of the structure and requirements of residency guidelines.

Clinical Review

1. All of the following are core competencies of the Accreditation Council for Graduate Medical Education (ACGME), *except*:
   A. Patient care
   B. Medical knowledge
   C. Communication skills
   D. Previous anesthesia training
2. Anesthesia residents are restricted to the following maximum number of work hours per week:
   A. 40
   B. 80
   C. 100
   D. 120
3. True statement regarding anesthesia residency is:
   A. Anesthesia residents can choose a specific clinical rotation any number of times.
   B. Anesthesia residents can choose specific clinical cases any number of times.
   C. Completing a scholarly activity is mandatory before graduating from anesthesia residency.
   D. Anesthesia residents have an absolute right to do moonlight duty if they choose to do so.

Answers: 1. D, 2. B, 3. C