Surgical Program Accreditation and Case Logs: What Is the Meaning of the Minima?

John R Potts III, MD, FACS

A BRIEF HISTORY OF PROGRAM ACCREDITATION

General surgery residency programs existed long before the ACGME. By the 1920s, there were a sufficient number of residency programs (in surgery and other disciplines) that the American Medical Association (AMA) began a process of residency program "approval."[1] In 1939, the American College of Surgeons (ACS) established criteria for graduate training in surgery and their own process for approval of such programs.[2] The 2 systems for approval ran parallel until 1950, when the American Board of Surgery (ABS), ACS, and AMA joined together in the creation of the Conference Committee on Graduate Training in Surgery.[3] Similar committees were established in the other surgical disciplines during the ensuing decade. As exponential growth in the pursuit of specialty training swept the country, the call emanated for the creation of a single body to oversee the overseers of what was, by then, known as graduate medical education. In response, the American Association of Medical Colleges, American Board of Medical Specialties, American Hospital Association, AMA, and Council of Medical Specialty Societies joined forces to establish the Liaison Committee for Graduate Medical Education (LCGME) in 1972.[1] The Conference Committee on Graduate Training in Surgery was officially disbanded with the establishment of the Residency Review Committee for Surgery (RRC-S), which, like similar committees in other specialties, functioned under the governance of the LCGME. For a number of reasons, the LCGME was disbanded in 1981 and replaced by the ACGME.[4] That ACGME, which was a council under the auspices of the AMA, proved to be only slightly more effective than its predecessor. In the face of nearly universal unhappiness with its structure and function, that ACGME was dissolved and replaced with a new ACGME in 2000.[5] That new ACGME (which is today's ACGME) was no longer a council of the AMA. Rather, it was (and is) an independent, tax-exempt corporation governed by an elected board of directors rather than by appointees of other organizations.

EVOLUTION OF CASE NUMBER REQUIREMENTS

The Conference Committee on Graduate Training in Surgery did not establish its own criteria for the approval of residency programs. Rather, the criteria for admission to the ABS examination process stood as a proxy for program requirements. In 1951, those criteria called only for trainees to, "Have sufficient operative experience to acquire surgical skill and judgment through the performance of surgical operations."[6] A decade later, the ABS criteria stated that for purposes of training residents, "The hospital must be able to provide an adequate number and variety of surgical patients. Arbitrary figures cannot reflect these considerations accurately. Under ordinary circumstances, however, a general hospital, to support a surgical residency, should have annual admissions to the surgical division numbering approximately 300 to 500."[7] With the advent of the LCGME and the RRC, the 1971-1972 Special Requirements for Residency Training in General Surgery continued to call only for the hospital to have annual admissions to the surgical division, "numbering approximately 300 to 500."[8] Another decade later, and after the establishment of the first ACGME, the Special Requirements for Residency Training in General Surgery were perhaps, even more vague stating only that, "An institution, to be approved to conduct graduate education in surgery, must be able to provide an adequate number and variety of surgical patients for which the resident has appropriate responsibility."[9] It is important to note that requirements for residency programs up until that time (such as they were) referred strictly to the cumulative clinical material that the sponsoring hospital could provide. It was not until the 1983-1984 Special Requirements that programs were held somewhat accountable for the number of cases performed by individual residents with the requirement that, "While the number of operations to be performed by each resident is not specified, experience has shown

Disclosure Information: Dr Potts is a full-time employee of the Accreditation Council for Graduate Medical Education.

Received April 2, 2019; Revised May 2, 2019; Accepted May 3, 2019.

From the Accreditation Council for Graduate Medical Education, Chicago, IL.

Correspondence address: John R Potts III, MD, FACS, Accreditation Council for Graduate Medical Education, 401 N Michigan Ave, Suite 2000, Chicago, IL 60611-4206. email: jpotts@acgme.org

https://doi.org/10.1016/j.jamcollsurg.2019.05.019
ISSN 1072-7515/19

Abbreviations and Acronyms

ABS = American Board of Surgery
ACS = American College of Surgeons
AMA = American Medical Association
LCGME = Liaison Committee for Graduate Medical Education
NAS = Next Accreditation System
RRC-S = Residency Review Committee for Surgery

that an acceptable range, in most instances, is from 500-800 total cases and from 150-300 cases as the 'Surgeon, Senior Year.'"[10]

Before 1989, completing residents reported their accrued cases only to the ABS in their applications to enter the certification process. A sea change occurred when, that year, the RRC-S began to collect the case logs of residents completing every program in the country. The RRC-S made an important addition in the 1990-1991 Special Requirements.[11] The "acceptable range" of operations by each resident remained unchanged at 500 to 1,000 major cases in all years and from 150 to 300 major cases in the chief year. However, now presumably armed with national case log data, a requirement was added stating that, "The volume and variety of the operative experience of each resident for the entire training program must be such as to assure a sufficient number and distribution of complex cases, as determined by the Residency Review Committee." That requirement addressed the establishment by the RRC-S of categorical minima. Those categorical minima were set forth in an RRC newsletter that was mailed to program directors in 1990. They were not specified in the requirements at that time and have never been specified in the special requirements or program requirements since. Nevertheless, those categorical minima became the basis of RRC citations of programs by 1991. The general surgery resident case logs were initially collected at the program level on 50-inch floppy diskettes and mailed to the ACGME. The ACGME created an online system for resident case logs in 2001 and all surgical specialty and subspecialty programs are now required to use that system.[12]

Only minor wording changes were made in the requirements about case volume between the 1990-1991 special requirements and the 2005 program requirements. And, the only important change in the requirements in 2005 was to clearly define the resident surgeon as follows: "A resident is considered to be the surgeon when he or she can document a significant role in the following aspects of management: determination or confirmation of the diagnosis, provision of preoperative care, selection and accomplishment of the appropriate operative procedure, direction of the postoperative care, and accomplishment of sufficient follow-up to be acquainted with both the course of the disease and the outcome of its treatment. Participation in the operation only, without preoperative and postoperative care, is inadequate."[13] Ironically, the role of the teaching assistant had been defined more than 2 decades earlier in the special requirements of 1983-1984.[10] "First assistant," which is the only other operative role tracked in the ACGME general surgery case log, has been defined on the ACGME website but has never been defined in the program requirements.

It was not until the 2008 program requirements that a minimum total number of cases per resident was specified with the requirement that, "The program director must ensure that each resident has at least 750 major cases across the five years of training. This must include a minimum of 150 major cases in the resident's chief year."[14] That iteration of the requirements also importantly stated that, "The program director must, along with the physician faculty, assess the technical competence of each resident. The Review Committee requires that each resident perform a minimum number of certain cases *for accreditation*. Performance of *this minimum number of cases by a resident must not be interpreted as an equivalent to competence achievement*" [emphasis added]. That statement remains in the program requirements, which are effective today.[15]

As of this writing, the only other substantial change to the requirements about case volume is that the program requirements effective July 1, 2018 increased the minimum number of major cases that each resident must have to 850 for the 5 years of training and 200 in the chief year.[15]

ACCREDITATION VS CERTIFICATION

The RRC-S (like the other surgical review committees), with authority delegated by the ACGME, accredits residency and fellowship programs. In the process of doing so, it uses certain data reflective of the educational opportunities afforded to individuals currently enrolled in those programs. Several types of data so used are attributable to individual trainees. Examples include (but are not limited to) operative case logs, scholarly activity, responses to the Annual ACGME Resident Survey, and the success rate of program graduates in passing the ABS Qualifying Examination and Certifying Examination. What is critically important to understand, though, is that although those data are attributable to individual trainees currently enrolled in, and graduates of, a program, the RRC uses

the data collectively to determine whether a program should be accredited and, if accredited, the accreditation status and the resident complement allowed. The RRC renders no judgment about the knowledge, skills, attitudes, or other attributes of an individual trainee. Assessment of the individual trainee is entirely within the purview of the program director aided, of course, by the other faculty members of the program. If, on completion of the program, the trainee is deemed by the program director to have, "demonstrated sufficient competence to enter practice without supervision"[15] and to have, "completed an appropriate educational experience and attained a sufficiently high level of knowledge, clinical judgment and technical skills, as well as ethical standing, to be admitted to the certification process"[16] then that individual can be recommended by the program director to enter the ABS certification process. Stated in the simplest way, programs can be accredited and individuals can be certified. To be sure, there is some overlap at the margins between accreditation and certification. For example, the ABS accepts as candidates only individuals who have completed a general surgery residency program that is accredited by the ACGME or the Royal College of Physicians and Surgeons of Canada.[16] And, the ACGME RRC-S uses ABS examination pass rate data as an important metric of the educational outcomes of programs. To be clear though, the ABS has no direct role in the process of accrediting programs. Conversely, the ACGME and the RRC-S have no direct role in the certification of individuals.

The Next Accreditation System, case minima, and individual competence

The ACGME's Next Accreditation System (NAS), which has now been in effect for more than 5 years and could be more properly called the "New Accreditation System," was established with a number of aims.[17] Among those was to reduce the burden of accreditation for programs by increasing the interval between site visits and to eliminate the periodic preparation of the program information forms that preceded those visits. Although the interval between regular site visits has been expanded and the program information forms eliminated, another aim of the NAS was for the RRCs to make more frequent (annual) accreditation decisions on every program. Tools used by the RRCs to make those decisions include a brief annual information form, the annual ACGME resident and faculty surveys, annual reports of resident operative experience, and the success of program graduates on board certifying examinations. Resident operative experience is reported to the RRC in the form of graduate case logs and, in the transition to NAS, each surgical review committee was given the opportunity to determine how those case logs would be used in the annual accreditation process. Rather than to have a single pass or fail criterion for operative experience, each of the surgical review committees created for their specialties minimum acceptable numbers of cases of several particular types and/or categories. For some review committees, a "category" included a total number of cases performed throughout the residency program and/or a total number of cases performed throughout a given interval of the program, that is, the chief resident year. The review committees then weigh the performance of a program (again, as an accumulation of the cases recorded by individuals) against those minima that they have established. The RRC-S had established case minima more than 2 decades before the NAS, so invoking those minima in the annual accreditation decisions about programs was virtually automatic. In addition, the general surgery programs were long since accustomed to categorical minima, including the quest to meet them and the consequences of failure to do so. Most of the other surgical specialties, though, had either very broad requirements for resident operative experience or none at all. For example, before the NAS the RRC for Orthopaedic Surgery required only that, "Each graduating resident must log between 1000 and 3000 procedures"[18] and the RRC for Obstetrics and Gynecology had no criteria for the number of procedures performed by residents.[19] This likely explains why no program requirements other than those for general surgery explicitly state that the minimum number of cases by a resident must not be interpreted as a proxy for competence.

In preparation for the NAS, most of the surgical review committees had to devote a great deal of time and effort to the creation of the procedural minima that they would use going forward. There was (and is) no ACGME policy by which determination of case log minima is standardized across the 10 surgical review committees. Therefore, each accomplished the task in its own way. In very general terms, 2 steps were taken by each review committee to establish case minima. The first was to determine which specific cases or groups of cases are the most important for residents in the specialty to learn to perform. The second was to then determine the minimum number of each of those that should be available to every resident in a program for that program to be worthy of accreditation. In most instances, the number representing the 10th percentile in programs across the nation was the starting point for that discussion. Depending on many factors, the minimum chosen by the review committee might have been lower or slightly higher than that 10th percentile. Minimums were rarely set much higher than the 10th percentile because the review committees did not wish to jeopardize

large numbers of existing programs. For some procedures in which minima are established, ophthalmology gives equal credit for residents performing as surgeon or assistant[20] and neurological surgery gives equal credit for the roles of both "senior resident surgeon" and "lead resident surgeon."[21] The effects of crediting multiple roles in one operation are accounted for in deriving minimum case numbers and every surgical specialty has defined the operative roles that residents can perform. Those definitions are set forth in program requirements, other publicly available documents on the ACGME website and/or within the case log portal, itself. In addition, some review committees allow residents to "unbundle" a single operation into multiple distinct and "countable" procedures, and others do not. Again, the effects of those choices by the review committees are accounted for in deriving minimum case numbers.

Lacking experience with case log minima, the transition to their use in the NAS has been difficult for some programs. Of much greater concern, though, is that within many of the surgical specialties for which minima have only recently been implemented, there has been a level of misunderstanding about the purpose and significance of the minima. To wit, some program directors, faculty members, residents, and others mistakenly believe that the RRC case minima are a surrogate for individual competence in a given operation, a given category of operations, or the specialty, as a whole. A program might choose to use case logs as a part of its assessment of an individual resident's acquisition of skill, knowledge, and judgment. However, the determination of individual competence or even criteria for individual competence is not in the purview of the review committees and, certainly, the determination of individual competence is not at all the purpose of the case log minima. Using the general surgery minima as an example, it is almost inconceivable that anyone would consider an individual who performed only the required minimum of 50 vascular surgery cases in residency to be competent to independently practice the full spectrum of modern vascular surgery. The case log minima were created to serve as one tool in the process of accrediting programs. In particular, the review committees use the minima and a program's performance against those minima to determine whether that program provides a sufficient breadth and depth of surgical experience for it to be accredited to train a given complement of residents. Simply put, the case minima constitute a floor for program performance. They were never intended for, and should never be viewed as, a ceiling for individual resident performance. They were never intended for, and should certainly not be considered as, a proxy for surgical competence. Residents should, of course, record in the ACGME case log every operation that they perform. For purposes of accreditation, it is important that every case be logged (even if that case does not count toward a particular minimum) so that the review committees can appreciate the full breadth and depth of operative experience available to residents in a given program. A secondary reason for residents to record every operation is that their case logs can be used after completion of the residency program for purposes of certification and/or credentialing.

SUMMARY

Despite the fact that they have been used by the RRC-S for decades, case log minima are relatively new in the other surgical specialties. Nevertheless, the purpose of case log minima is the same across all of the surgical specialties. They are used by the review committees as a means of assessing the breadth and depth of operative experience available to the residents in a given program as one tool in the accreditation process. The minima are designed to function only as a floor for program performance. They were not designed to be, should not be considered to be, and should not be used as ceilings for individual resident operative experience or as proxies for individual surgical competence.

REFERENCES

1. Swanson AG. The genesis of the Coordinating Council on Medical Education and the Liaison Committee on Graduate Medical Education. Bull N Y Acad Med 1974;50:1216–1221.
2. MacEachern MT. Criteria for graduate training for surgery and a manual of graduate training for surgery. Bull Am Coll Surg 1939;24:6–13.
3. Holden WD. The Conference Committee on Graduate Education in Surgery. Surgery 1968;64:506–508.
4. Swanson AG. Rapprochement and reorganization: a new, new beginning for accreditation. J Med Educ 1980;55:1039–1041.
5. ACGME. Medical Education Articles of Incorporation. File Number 6110-900-5. Chicago, IL: State of Illinois Office of the Secretary of State; June 27, 2000.
6. Approved internships and residencies in the United States 1951. JAMA 1951;147:381–514.
7. Special Requirements for Residency Training in General Surgery. In: Directory of Approved Internships and Residencies 1961. Chicago, IL: American Medical Association; 1961.
8. Special Requirements for Residency Training in General Surgery. In: Directory of Approved Internships and Residencies 1971-72. Chicago, IL: American Medical Association; 1971.
9. Special Requirements for Residency Training in General Surgery. In: 1981/1982 Directory of Residency Training Programs Accredited by the Liaison Committee on Graduate Medical Education. Chicago, IL: American Medical Association; 1981.
10. Special Requirements for Residency Training in General Surgery. In: 1983/1984 Directory of Residency Training Programs Accredited by the Accreditation Council for Graduate

Medical Education. Chicago, IL: American Medical Association; 1983.
11. Special Requirements for Residency Training in General Surgery. In: 1990-1991 Directory of Residency Training Programs Accredited by the Accreditation Council for Graduate Medical Education. Chicago, IL: American Medical Association; 1990.
12. Specialty Case Log Information. Available at: https://apps.acgme.org/ads/Public. Accessed October 23, 2018.
13. Program Requirements for Residency Education in Surgery. In: Graduate Medical Education Directory 2005-2006. Chicago, IL: American Medical Association; 2005.
14. ACGME Program Requirements for Graduate Medical Education in Surgery. ACGME Approved: June 12, 2007, Effective: January 1, 2008. Chicago, IL: ACGME; 2007.
15. ACGME Program Requirements for Graduate Medical Education in Surgery. ACGME Approved: September 24, 2017, Effective: July 1, 2018. Chicago, IL: ACGME; 2017.
16. The American Board of Surgery Booklet of Information Surgery 2017-2018. Philadelphia, PA: American Board of Surgery; 2017.
17. Nasca TJ, Philibert I, Brigham T, Flynn TC. The next GME accreditation system—rationale and benefits. N Engl J Med 2012;366:1051–1056.
18. ACGME Program Requirements for Graduate Medical Education in Orthopaedic Surgery. ACGME Approved: September 30, 2012, Effective: July 1, 2013. Chicago, IL: ACGME; 2012.
19. ACGME Program Requirements for Graduate Medical Education in Obstetrics and Gynecology. ACGME Approved: June 12, 2007, Effective: January 1, 2008. Chicago, IL: ACGME; 2007.
20. ACGME. Required Minimum Number of Procedures for Graduating Residents in Ophthalmology. Review Committee for Ophthalmology. Available at: https://www.acgme.org/Portals/0/PFAssets/ProgramResources/240_Oph_Minimum_Numbers.pdf?ver=2015-11-06-120652-043. Accessed April 30, 2019.
21. ACGME. Case Log Guidelines. Review Committee for Neurological Surgery. Available at: https://www.acgme.org/Portals/0/PFAssets/ProgramResources/Case_Log_Guidelines.pdf?ver=2016-04-19-140246-217. Accessed April 30, 2019.