

Program Requirements for Residency Education in Surgical Critical Care (Surgery)

I. Introduction

A. Definition and Scope of the Specialty

1. Surgical critical care deals with complex surgical and medical problems in critically ill surgical patients. Institutions sponsoring graduate educational programs in surgical critical care must provide the educational, clinical, and administrative resources to allow residents to develop advanced proficiency in the management of critically ill surgical patients, to develop the qualifications necessary to supervise surgical critical care units, and to conduct scholarly activities in surgical critical care. The educational program must be an integral part of and enhance an accredited core program in general surgery.
2. A subspecialty educational program in surgical critical care is in addition to the requirements for critical care education set forth in the Program Requirements for these core programs. There should be an institutional policy governing the educational resources committed to critical care programs and ensuring cooperation of all involved disciplines.
3. Residents in general surgery, neurosurgery, urology, or obstetrics and gynecology who enter the program prior to completing a residency must have a categorical residency position in their specialty available to them on satisfactory completion of the critical care fellowship.

B. Duration and Scope of Training

1. The length of the educational program is 12 months, of which 2 months may be elective rotations. These 12 months must be devoted to advanced educational and clinical activities related to the care of critically ill patients and to the administration of critical care units.
2. In some instances, residents may devote up to 25% of their time to direct operative care of critically ill patients. During such operative care, the critical care resident and chief resident in general surgery may not share primary responsibility for the same patient. However, in the nonoperative management of critically ill surgical patients the surgical critical care residents and general surgery residents may interact as long as they share primary responsibility in patient management decisions. The final decision and responsibility rests with the supervising attending surgeon.

II. Institutions

A. Sponsoring Institution

One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to resident assignments at all participating institutions.

1. Residency education programs in surgical critical care may be accredited only in institutions which either sponsor a residency education program in general surgery or pediatric surgery accredited by the Accreditation Council for Graduate Medical Education (ACGME) or are integrated by formal agreement into such programs. The critical care program will be approved only as an administratively integrated part of the approved core program in general or pediatric surgery.
2. When more than one critical program exists in an institution, it is the responsibility of the institution to coordinate interdisciplinary requirements to ensure that each resident meets the specific criteria of their primary specialty, e.g., surgery, medicine, and anesthesiology.
3. A surgical critical care program must include primary educational activities in a surgical critical care unit with pediatric and/or adult patients, located in an institution that has been approved by the Residency Review Committee (RRC) for surgery as an integrated institution with a core general surgery or pediatric surgery residency program. The education may take place in various settings that provide for the care of critically ill adult and/or pediatric surgical patients, including those with general surgical conditions such as trauma, burns, and surgical oncology; with cardiothoracic, neurosurgical, and high-risk pregnancy conditions; and with organ transplantation
4. It is desirable that the sponsoring have accredited residency programs in surgery and the surgical specialties as well as those that relate particularly to surgery such as internal medicine, radiology, pathology, and anesthesiology.

B. Participating Institutions

1. **Assignment to an institution must be based on a clear educational rationale, integral to the program curriculum, with clearly stated activities and objectives. When multiple participating institutions are used, there should be assurance of the continuity of the educational experience.**
2. **Assignment to a participating institution requires a letter of agreement with the sponsoring institution. Such a letter of agreement should:**

- a. **identify the faculty who will assume both educational and supervisory responsibilities for residents;**
- b. **specify their responsibilities for teaching, supervision, and formal evaluation of residents, as specified later in this document;**
- c. **specify the duration and content of the educational experience; and**
- d. **state the policies and procedures that will govern resident education during the assignment.**
- e. Clinical assignments to participating institutions may be approved only for a maximum of three months; adequate educational justification for such rotations must be provided to the RRC prior to implementation. Such assignments require advance approval of the RRC.

III. Program Personnel and Resources

A. Program Director

- 1. **There must be a single program director responsible for the program. The person designated with this authority is accountable for the operation of the program. In the event of a change of either program director or department chair, the program director should promptly notify the executive director of the Residency Review Committee (RRC) through the Web Accreditation Data System of the Accreditation Council for Graduate Medical Education (ACGME).**
- 2. **The program director, together with the faculty, is responsible for the general administration of the program, and for the establishment and maintenance of a stable educational environment. Adequate lengths of appointment for both the program director and faculty are essential to maintaining such an appropriate continuity of leadership. The length of the program director's appointment is the length of the program plus one year, i.e., two years.**
- 3. **Qualifications of the program director are as follows:**
 - a. **The program director must possess the requisite specialty expertise, as well as documented educational and administrative abilities.**

- b. **The program director must be certified in the specialty by the American Board of Surgery in Surgical Critical Care, or possess qualifications judged to be acceptable by the RRC.**
- c. **The program director must be appointed in good standing and based at the primary teaching site.**
- d. The program director of the critical care program must be the director or co-director of one or more of the critical care units in which the clinical aspects of the critical care program take place, and he or she must be personally involved in clinical supervision and teaching of general surgery and surgical critical care residents in that unit.
- e. The program director shall have administrative responsibility for the surgical critical care educational program and shall appoint all residents and teaching staff to the program and determine their duties.

4. Responsibilities of the program director are as follows:

- a. **The program director must oversee and organize the activities of the educational program in all institutions that participate in the program. This includes selecting and supervising the faculty and other program personnel at each participating institution, appointing a local site director, and monitoring appropriate resident supervision at all participating institutions.**
- b. **The program director is responsible for preparing an accurate statistical and narrative description of the program as requested by the RRC, as well as updating annually both program and resident records through the ACGME's Accreditation Data System.**
- c. **The program director must ensure the implementation of fair policies, grievance procedures, and due process, as established by the sponsoring institution and in compliance with the Institutional Requirements.**
- d. **The program director must seek the prior approval of the RRC for any changes in the program that may significantly alter the educational experience of the residents. Such changes, for example, include:**

- 1) **the addition or deletion of a participating institution;**
- 2) **a change in the format of the educational program;**
- 3) **a change in the approved resident complement for those specialties that approve resident complement.**

On review of a proposal for any such major change in a program, the RRC may determine that a site visit is necessary.

- e. In the teaching environment of a surgical critical care unit, it is recognized that the teaching staff in surgery, medicine, pediatrics, obstetrics and gynecology, anesthesiology, and other specialties may all be involved in the care of specific patients. Therefore, a collegial relationship must exist between the surgical director of the critical care educational program and the teaching staff to enhance the educational opportunities for all residents.

B. Faculty

1. **At each participating institution, there must be a sufficient number of faculty with documented qualifications to instruct and supervise adequately all residents in the program.**
2. **The faculty, furthermore, must devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities. They must demonstrate a strong interest in the education of residents, and must support the goals and objectives of the educational program of which they are a member.**
3. **Qualifications of the physician faculty are as follows:**
 - a. **The physician faculty must possess the requisite specialty expertise and competence in clinical care and teaching abilities, as well as documented educational and administrative abilities and experience in their field.**

- b. **The physician faculty must be certified in surgical critical care by the American Board of Surgery or possess qualifications judged to be acceptable by the RRC.**
 - c. **The physician faculty must be appointed in good standing to the staff of an institution participating in the program.**
 - d. At least one surgeon qualified in surgical critical care must be appointed to the teaching staff for every critical care resident enrolled in the program.
 - e. The surgical critical care faculty- to- resident ratio must be at least one to one.
4. **The responsibility for establishing and maintaining an environment of inquiry and scholarship rests with the faculty and an active research component must be included in each program. *Scholarship* is defined as the following:**
- a. **the scholarship of *discovery*, as evidenced by peer-reviewed funding or by publication of original research in a peer-reviewed journal;**
 - b. **the scholarship of *dissemination*, as evidenced by review articles or chapters in textbooks;**
 - c. **the scholarship of *application*, as evidenced by the publication or presentation of, for example, case reports or clinical series at local, regional, or national professional and scientific society meetings.**

Complementary to the above scholarship is the regular participation of the teaching staff in clinical discussions, rounds, journal clubs, and research conferences in a manner that promotes a spirit of inquiry and scholarship (e.g., the offering of guidance and technical support for residents involved in research such as research design and statistical analysis); and the provision of support for residents' participation, as appropriate, in scholarly activities.

5. **Qualifications of the nonphysician faculty are as follows:**
- a. **Nonphysician faculty must be appropriately qualified in their field.**

b. **Nonphysician faculty must possess appropriate institutional appointments.**

C. **Other Program Personnel**

Additional necessary professional, technical, and clerical personnel must be provided to support the program. These staff must include specially trained nurses and technicians who are skilled in critical care instrumentation, respiratory function, and laboratory medicine.

D. **Resources**

The program must ensure that adequate resources (e.g., sufficient laboratory space and equipment, computer and statistical consultation services) are available.

The critical unit must be located in a designated area within the institution, constructed and designed specifically for the care of critically ill patients.

IV. **Resident Appointments**

A. **Eligibility Criteria**

The program director must comply with the criteria for resident eligibility as specified in the Institutional Requirements.

Completion of at least 3 clinical years in an accredited graduate educational program in the disciplines of general surgery, neurosurgery, urology, or obstetrics and gynecology is a prerequisite for admission to the program.

B. **Number of Residents**

The RRC will approve the number of residents based upon established written criteria that include the adequacy of resources for resident education (e.g., the quality and volume of patients and related clinical material available for education), faculty-resident ratio, institutional funding, and the quality of faculty teaching.

Any increase in resident complement, permanent or temporary, must be approved in advance by the RRC.

C. **Resident Transfers**

To determine the appropriate level of education for residents who are transferring from another residency program, the program director

must receive written verification of previous educational experiences and a statement regarding the performance evaluation of the transferring resident prior to their acceptance into the program. A program director is required to provide verification of residency education for residents who may leave the program prior to completion of their education.

D. Appointment of Fellows and Other Students

The appointment of fellows and other specialty residents or students must not dilute or detract from the educational opportunities available to regularly appointed residents.

V. Program Curriculum

A. Program Design

1. Format

The program design and sequencing of educational experiences will be approved by the RRC as part of the review process.

2. Goals and Objectives

The program must possess a written statement that outlines its educational goals with respect to the knowledge, skills, and other attributes of residents for each major assignment and for each level of the program. This statement must be distributed to residents and faculty, and must be reviewed with residents prior to their assignments.

3. The surgical critical care program must enable the resident to acquire an advanced body of knowledge and level of skill in the management of critically ill surgical patients in order to assume a leadership role in teaching and in research in surgical critical care. This advanced body of knowledge and level of skill must include the mastery of (1) the use of advanced technology and instrumentation to monitor the physiologic status of children or adults of both sexes, including those in the neonatal, pediatric, child-bearing, or advanced years; (2) organizational and administrative aspects of a critical care unit; and (3) ethical, economic, and legal issues as they pertain to critical care.

4. Residents completing a surgical critical care residency program will be expected to

a. teach the specialty of surgical critical care.

- b. undertake investigations into the various areas of surgical critical care, such as new instrumentation, identification of important physiologic parameters, evaluation of pharmacologic agents in critically ill patients, or health outcomes and/or health policy issues related to surgical critical care.
- c. administer a surgical critical care unit and appoint, educate, and supervise specialized personnel, establish policy and procedures for the unit, and coordinate the activities of the unit with other administrative units within the hospital.

B. Specialty Curriculum

The program must possess a well-organized and effective curriculum, both didactic and clinical. The curriculum must also provide residents with direct experience in progressive responsibility for patient management.

1. Didactic Curriculum

The program must provide the opportunity for residents to acquire advanced knowledge of the following aspects of critical care, particularly as they relate to the management of patients with homodynamic instability, multiple system organ failure, and complex coexisting medical problems:

- a. Cardiorespiratory resuscitation
- b. Physiology, pathophysiology, diagnosis, and therapy of disorders of the cardiovascular, respiratory, gastrointestinal, genitourinary, neurological, endocrine, musculoskeletal, and immune systems, as well as of infectious diseases
- c. Metabolic, nutritional, and endocrine effects of critical illness
- d. Hematologic and coagulation disorders
- e. Critical obstetric and gynecologic disorders
- f. Trauma, thermal, electrical, and radiation injuries
- g. Inhalation and immersion injuries
- h. Monitoring and medical instrumentation

- i. Critical pediatric surgical conditions
 - j. Pharmacokinetics and dynamics of drug metabolism and excretion in critical illness
 - k. Ethical and legal aspects of surgical critical care
 - l. Principles and techniques of administration and management
 - m. Biostatistics and experimental design
2. Clinical Components

The program must provide supervised training that will enable the resident to gain competence in the performance and application of the following critical care skills:

- a. Respiratory: airway management, including endoscopy and management of respiratory systems
- b. Circulatory: invasive and noninvasive monitoring techniques, including trans-esophageal and pericardial cardiac ultrasound and application of transvenous pacemakers; computations of cardiac output and of systemic and pulmonary vascular resistance; monitoring electrocardiograms and management of cardiac assist devices
- c. Neurological: the performance of complete neurological examinations; the use of intracranial pressure monitoring techniques and of the electroencephalogram to evaluate cerebral function; application of hypothermia in the management of cerebral trauma
- d. Renal: the evaluation of renal function; peritoneal dialysis and hemofiltration; knowledge of the indications and complications of hemodialysis
- e. Gastrointestinal: utilization of gastrointestinal intubation and endoscopic techniques in the management of the critically ill patient; application of enteral feedings; management of stomas, fistulas, and percutaneous catheter devices

- f. Hematologic: application of autotransfusion; assessment of coagulation status; appropriate use of component therapy
- g. Infectious disease: classification of infections and application of isolation techniques, pharmacokinetics, drug interactions, and management of antibiotic therapy during organ failure; nosocomial infections; indications for applications of hyperbaric oxygen therapy
 - i. Nutritional: application of parenteral and enteral nutrition; monitoring and assessing metabolism and nutrition
 - ii. Monitoring/bioengineering: use and calibration of transducers, amplifiers, and recorders
 - iii. Miscellaneous: use of special beds for specific injuries; employment of pneumatic antishock garments, traction, and fixation devices

3. Documentation of Clinical Experiences

The program must document to the site visitor that residents in the surgical critical care program have had direct involvement in the management of a broad spectrum of critically ill surgical patients. In addition, each resident must submit an operative log of the number and type of operative experiences while a surgical critical care resident.

- 4. To provide a sufficient breadth of patient exposure, a critical care program must document an average daily census of at least 10 patients.
- 5. The average daily census for each critical care unit to which residents are assigned must permit a resident-to-patient ratio of one resident to five patients.

C. Residents Scholarly Activities

Each program must provide an opportunity for residents to participate in research or other scholarly activities, and residents must participate actively in such scholarly activities.

D. ACGME Competencies

(N.B.: Section V. D. does not apply to this subspecialty.)

VI. Resident Duty Hours and the Working Environment

Providing residents with a sound didactic and clinical education must be carefully planned and balanced with concerns for patient safety and resident well-being. Each program must ensure that the learning objectives of the program are not compromised by excessive reliance on residents to fulfill service obligations. Didactic and clinical education must have priority in the allotment of residents' time and energy. Duty hour assignments must recognize that faculty and residents collectively have responsibility for the safety and welfare of patients.

A. Supervision of Residents

- 1. All patient care must be supervised by qualified faculty. The program director must ensure, direct, and document adequate supervision of residents at all times. Residents must be provided with rapid, reliable systems for communicating with supervising faculty.**
- 2. Faculty schedules must be structured to provide residents with continuous supervision and consultation.**
- 3. Faculty and residents must be educated to recognize the signs of fatigue, and adopt and apply policies to prevent and counteract its potential negative effects.**

B. Duty Hours

- 1. Duty hours are defined as all clinical and academic activities related to the residency program; i.e., patient care (both inpatient and outpatient), administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled activities such as conferences. Duty hours do *not* include reading and preparation time spent away from the duty site.**
- 2. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.**
- 3. Residents must be provided with 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period, inclusive of call. *One day* is defined as 1 continuous 24-hour period free from all clinical, educational, and administrative duties.**

4. **Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all daily duty periods and after in-house call.**

C. On-call Activities

The objective of on-call activities is to provide residents with continuity of patient care experiences throughout a 24-hour period. *In-house call* is defined as those duty hours beyond the normal work day, when residents are required to be immediately available in the assigned institution.

1. **In-house call must occur no more frequently than every third night, averaged over a 4-week period.**
2. **Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Residents may remain on duty for up to 6 additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care.**
3. **No new patients may be accepted after 24 hours of continuous duty.**

A new patient is defined as one not seen previously by the department.

4. ***At-home call* (or *pager call*) is defined as a call taken from outside the assigned institution.**
 - a. **The frequency of at-home call is not subject to the every-third- night limitation. At-home call, however, must not be so frequent as to preclude rest and reasonable personal time for each resident. Residents taking at-home call must be provided with 1 day in 7 completely free from all educational and clinical responsibilities, averaged over a 4-week period.**
 - b. **When residents are called into the hospital from home, the hours residents spend in-house are counted toward the 80-hour limit.**
 - c. **The program director and the faculty must monitor the demands of at-home call in their programs, and make scheduling adjustments as necessary to mitigate excessive service demands and/or fatigue.**

D. Moonlighting

- 1. Because residency education is a full-time endeavor, the program director must ensure that moonlighting does not interfere with the ability of the resident to achieve the goals and objectives of the educational program.**
- 2. The program director must comply with the sponsoring institution's written policies and procedures regarding moonlighting, in compliance with the ACGME Institutional Requirements.**
- 3. Any hours a resident works for compensation at the sponsoring institution or any of the sponsor's primary clinical sites must be considered part of the 80-hour weekly limit on duty hours. This refers to the practice of *internal moonlighting*.**

E. Oversight

- 1. Each program must have written policies and procedures consistent with the Institutional and Program Requirements for resident duty hours and the working environment. These policies must be distributed to the residents and the faculty. Duty hours must be monitored with a frequency sufficient to ensure an appropriate balance between education and service.**
- 2. Back-up support systems must be provided when patient care responsibilities are unusually difficult or prolonged, or if unexpected circumstances create resident fatigue sufficient to jeopardize patient care.**

F. Duty Hours Exceptions

An RRC may grant exceptions for up to 10% of the 80-hour limit to individual programs based on a sound educational rationale. Prior permission of the institution's GMEC, however, is required.

VII. Evaluation

A. Resident

1. Formative Evaluation

The faculty must evaluate in a timely manner the residents whom they supervise. In addition, the residency program must

demonstrate that it has an effective mechanism for assessing resident performance throughout the program, and for utilizing the results to improve resident performance.

- a. Assessment should include the use of methods that produce an accurate assessment of residents' competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.**
- b. Assessment should include the regular and timely performance feedback to residents that includes at least semiannual written evaluations. Such evaluations are to be communicated to each resident in a timely manner, and maintained in a record that is accessible to each resident.**
- c. Assessment should include the use of assessment results, including evaluation by faculty, patients, peers, self, and other professional staff, to achieve progressive improvements in residents' competence and performance.**

2. Final Evaluation

The program director must provide a final evaluation for each resident who completes the program. This evaluation must include a review of the resident's performance during the final period of education, and should verify that the resident has demonstrated sufficient professional ability to practice competently and independently. The final evaluation must be part of the resident's permanent record maintained by the institution.

B. Faculty

The performance of the faculty must be evaluated by the program no less frequently than at the midpoint of the accreditation cycle, and again prior to the next site visit. The evaluations should include a review of their teaching abilities, commitment to the educational program, clinical knowledge, and scholarly activities. This evaluation must include annual written confidential evaluations by residents.

C. Program

The educational effectiveness of a program must be evaluated at least annually in a systematic manner.

- 1. Representative program personnel (i.e., at least the program director, representative faculty, and one resident) must be organized to review program goals and objectives, and the effectiveness with which they are achieved. This group must conduct a formal documented meeting at least annually for this purpose. In the evaluation process, the group must take into consideration written comments from the faculty, the most recent report of the GMEC of the sponsoring institution, and the residents' confidential written evaluations. If deficiencies are found, the group should prepare an explicit plan of action, which should be approved by the faculty and documented in the minutes of the meeting.**
- 2. The program should use resident performance and outcome assessment in its evaluation of the educational effectiveness of the residency program. Performance of program graduates on the certification examination should be used as one measure of evaluating program effectiveness. The program should maintain a process for using assessment results together with other program evaluation results to improve the residency program.**

VIII. Experimentation and Innovation

Since responsible innovation and experimentation are essential to improving professional education, experimental projects along sound educational principles are encouraged. Requests for experimentation or innovative projects that may deviate from the program requirements must be approved in advance by the RRC, and must include the educational rationale and method of evaluation. The sponsoring institution and program are jointly responsible for the quality of education offered to residents for the duration of such a project.

IX. Certification

Residents who plan to seek certification by the American Board of Surgery should communicate with the office of the board regarding the full requirements for certification.

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