



ACGME International

**Advanced Specialty Program Requirements for
Graduate Medical Education
in Critical Care Medicine**

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I Introduction

I.A. Definition and Scope of Specialty

Critical care medicine is concerned with the diagnosis, management, and prevention of complications in patients who are severely ill and who usually require intensive monitoring and/or organ system support.

I.B. Duration of Education

- I.B.1. The educational program in critical care medicine must be 24 or 36 months in length.

II Institutions

II.A. Sponsoring Institutions

- II.A.1. A critical care medicine fellowship must function as an integral part of an ACGME-I-accredited residency in internal medicine.
- II.A.2. Located at the primary clinical site, there should be at least three ACGME-I-accredited subspecialty programs from among the following internal medicine disciplines: cardiovascular disease, gastroenterology, infectious diseases, nephrology, or pulmonary disease.
- II.A.3. The Sponsoring Institution should sponsor an ACGME-I-accredited residency program in general surgery.

II.B. Participating Sites

See International Subspecialty Foundational Requirements, Section I.B.

III Program Personnel and Resources

III.A. Program Director

- III.A.1. The program director must be responsible for monitoring fellow stress, including mental or emotional conditions inhibiting performance or learning, and drug or alcohol-related dysfunction.

- III.A.2. The program director should provide access to timely confidential counseling and psychological support services to fellows.
- III.A.3. Situations that demand excessive service or that consistently produce undesirable stress on fellows must be evaluated and modified.
- III.A.4. The program director must:
 - III.A.4.a) ensure that fellows' service responsibilities are limited to patients for whom the teaching service has diagnostic and therapeutic responsibility; and,
 - III.A.4.b) participate in academic societies and in educational programs designed to enhance his or her educational and administrative skills.

III.B. Faculty

- III.B.1. Core Faculty Members
 - III.B.1.a) In addition to the program director, each program must have at least two Core Faculty (CF) members.
 - III.B.1.b) There must be at least one CF for every two fellows.
 - III.B.1.c) CF must be active clinicians with knowledge of, experience with, and commitment to critical care medicine as a discipline.
 - III.B.1.d) Core Faculty Responsibilities
 - III.B.1.d).(1) In addition to the responsibilities of all individual faculty members, the CF and the program director must be responsible for the planning, implementation, monitoring, and evaluation of the fellows' clinical and research education.
 - III.B.1.d).(2) At least 50 percent of the CF must demonstrate evidence of productivity in scholarship, specifically, peer-reviewed funding; publication of original research, review articles, editorials, or case reports in peer-reviewed journals; or chapters in textbooks.
 - III.B.1.d).(3) At least one CF must:

III.B.1.d).(3).(a) be knowledgeable in evaluation and assessment of the ACGME-I competencies; and,

III.B.1.d).(3).(b) spend significant time in the evaluation of fellows, including direct observation of fellows with patients.

III.B.2. Other Faculty Members

III.B.2.a) Board-certified or equivalent clinical faculty members in cardiology, gastroenterology, hematology, infectious disease, nephrology, oncology, and pulmonary disease must participate in the education of fellows

III.B.2.b) Faculty members from anesthesiology, cardiovascular surgery, emergency medicine, neurology, neurological surgery, obstetrics and gynecology, orthopaedic surgery, surgery, thoracic surgery, urology, and vascular surgery should be available to participate in the education of fellows.

III.C. Other Program Personnel

III.C.1. There must be services available from other health care professionals, including dietitians, language interpreters, nurses, occupational therapists, physical therapists, and social workers.

III.C.2. Personnel must include nurses and technicians who are skilled in critical care instrumentation, respiratory function, and laboratory medicine.

III.C.3. There must be appropriate and timely consultation from other specialties.

III.D. Resources

III.D.1. There must be space and equipment for the program, including meeting rooms, examination rooms, computers, visual and other educational aids, and work/study space.

III.D.2. Inpatient and outpatient systems must be in place to prevent fellows from performing routine clerical functions, such as scheduling tests and appointments, and retrieving records and letters.

III.D.3. Adequate facilities to support the educational program must be in place.

- III.D.3.a) The Sponsoring Institution must provide the broad range of facilities and clinical support services required to provide comprehensive care of adult patients.
- III.D.3.b) Fellows must have access to a lounge facility during assigned duty hours.
- III.D.3.c) When fellows are in the hospital, assigned night duty, or called in from home, they must be provided with a secure space for their belongings.
- III.D.3.d) There must be facilities to care for patients with acute myocardial infarction, severe trauma, shock, recent open heart surgery, recent major thoracic or abdominal surgery, and severe neurologic and neurosurgical conditions.
- III.D.4. The following laboratory and diagnostic services must be available at the primary clinical site:
 - III.D.4.a) a supporting laboratory that provides complete and prompt laboratory evaluation;
 - III.D.4.b) timely bedside imaging services for patients in the critical care units; and,
 - III.D.4.c) computed tomography (CT) imaging, including CT angiography.
- III.D.5. Other support services must be available, including:
 - III.D.5.a) an active open heart surgery program;
 - III.D.5.b) an active emergency service;
 - III.D.5.c) post-operative care and respiratory care services;
 - III.D.5.d) nutritional support services;
 - III.D.5.e) equipment necessary to care for critically-ill patients; and,
 - III.D.5.f) critical care unit(s) located in a designated area within the hospital, and constructed and designed specifically for the care of critically-ill patients.

- III.D.5.f).(1) Whether operating in separate locations or in combined facilities, the program must provide the equivalent of a medical intensive care unit (MICU), a surgical intensive care unit (SICU), and a coronary intensive care unit (CICU).
- III.D.5.f).(2) The MICU or its equivalent must be at the primary clinical site, and should be the focus of a teaching service.
- III.D.5.g) Other services should be available, including anesthesiology, laboratory medicine, and radiology.
- III.D.6. In the absence of an existing electronic health record, institutions must demonstrate institutional commitment to its development and progress toward its implementation.
- III.D.6.a) Access to an electronic health record should be provided.
- III.D.7. Patient Population
- III.D.7.a) The patient population must have a variety of clinical problems and stages of diseases.
- III.D.7.a).(1) Because critical care medicine is multidisciplinary in nature, the program must provide opportunities to manage adult patients with a wide variety of serious illnesses and injuries requiring treatment in a critical care setting.
- III.D.7.b) There must be patients of each gender, with a broad age range, including geriatric patients.
- III.D.7.c) A sufficient number of patients must be available to enable each fellow to achieve the required educational outcomes.
- III.D.7.c).(1) There must be an average daily census of at least five patients per fellow during assignments to critical care units.

IV Fellow Appointment

IV.A. Eligibility Criteria

IV.A.1. To be eligible for appointment at the F1 level, fellows should have completed an ACGME-I, ACGME-, or Royal College of Physicians and Surgeons of Canada (RCPSC)-accredited internal medicine or emergency medicine program.

IV.A.1.a) Fellows from ACGME-I, ACGME-, or RCPSC-accredited emergency medicine programs should have completed at least six months of direct patient care experience in internal medicine, of which at least three months must have been in a MICU.

IV.A.2. To be eligible for appointment at the F2 level, fellows must have completed a two- or three-year ACGME-I, ACGME-, or RCPSC-accredited internal medicine subspecialty fellowship program.

IV.A.2.a) Fellows who are appointed at the F2 level will automatically satisfy the requirement for 12 months of elective experience or scholarly activity.

IV.B. Number of Fellows

See International Subspecialty Foundational Requirements, Section III.B.

V Specialty-Specific Educational Program

V.A. Regularly Scheduled Didactic Sessions

V.A.1. The core curriculum must include a didactic program based upon the core knowledge content in the subspecialty area.

V.A.2. The program must afford each fellow an opportunity to review topics covered in conferences that he or she was unable to attend.

V.A.3. Fellows must participate in clinical case conferences, journal clubs, research conferences, and morbidity and mortality or quality improvement conferences.

V.A.4. All core conferences must have at least one faculty member present and must be scheduled as to ensure peer-peer and peer-faculty interaction.

V.A.5. Patient-based teaching must include direct interaction between fellows and faculty members, bedside teaching, discussion of pathophysiology, and the use of current evidence in diagnostic and therapeutic decisions.

- V.A.6. Patient-based teaching must be:
- V.A.6.a) formally conducted on all inpatient, outpatient, and consultative services; and,
 - V.A.6.b) conducted with a frequency and duration that ensures a meaningful and continuous teaching relationship between the assigned supervising faculty member(s) and fellows.
- V.A.7. Fellows must receive instruction in practice management relevant to critical care medicine.

V.B. Clinical Experiences

- V.B.1. A minimum of 12 months must be devoted to clinical experiences.
- V.B.1.a) At least six months must be devoted to the care of critically-ill medical patients (i.e., MICU/CICU or equivalent).
 - V.B.1.a).(1) This experience may be reduced up to three months by equivalent (month for month) ICU experience completed during a previous two- or three-year ACGME or ACGME-I-accredited internal medicine subspecialty fellowship program.
 - V.B.1.b) At least three months must be devoted to the care of critically-ill non-medical patients.
 - V.B.1.b).(1) This experience should consist of at least one month of direct patient care activity, with the remainder being fulfilled with either consultative activities or with direct care of such patients.
- V.B.2. At least 12 additional months must be devoted to appropriate elective experiences or scholarly activity.
- V.B.3. Fellows must participate in training using simulation.
- V.B.4. Fellows must be informed of the clinical outcomes of their patients who are discharged from the critical care units.
- V.B.5. Fellows must have clinical experience in the evaluation and management of patients:

- V.B.5.a) with trauma;
- V.B.5.b) with neurosurgical emergencies;
- V.B.5.c) with critical obstetric and gynecologic disorders; and,
- V.B.5.d) after discharge from the critical care unit.

V.B.6. Procedures and Technical Skills

- V.B.6.a) Direct supervision of procedures performed by each fellow must occur until proficiency has been acquired and documented by the program director.
- V.B.6.b) Faculty members must teach and supervise the fellows in the performance and interpretation of procedures.
 - V.B.6.b).(1) Procedures must be documented in each fellow's record, giving indications, outcomes, diagnoses, and supervisor(s).
- V.B.6.c) Fellows must have experience in the role of critical care medicine consultant in the inpatient setting.
- V.B.6.d) Fellows should have clinical experience in the placement of percutaneous tracheostomies.

V.C. Fellows' Scholarly Activities

See International Subspecialty Foundational Requirements, Section IV.C.

V.D. Duty Hour and Work Limitations

See International Subspecialty Foundational Requirements, Section VI.

VI ACGME-I Competencies

VI.A. Patient Care

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows must demonstrate proficiency in:

- VI.A.1. the practice of health promotion, disease prevention, diagnosis, care, and treatment of patients of each gender, from adolescence to old age, during health and all stages of illness; and,
- VI.A.2. prevention, evaluation, and management of patients with:
- VI.A.2.a) acute lung injury, including radiation, inhalation, and trauma;
 - VI.A.2.b) acute metabolic disturbances, including overdosages and intoxication syndromes;
 - VI.A.2.c) anaphylaxis and acute allergic reactions in the critical care unit;
 - VI.A.2.d) cardiovascular diseases in the critical care unit;
 - VI.A.2.e) circulatory failure;
 - VI.A.2.f) end-of-life issues and palliative care;
 - VI.A.2.g) hypertensive emergencies;
 - VI.A.2.h) immunosuppressed conditions in the critical care unit;
 - VI.A.2.i) metabolic, nutritional, and endocrine effects of critical illness, hematologic, and coagulation disorders associated with critical illness;
 - VI.A.2.j) multi-organ system failure;
 - VI.A.2.k) peri-operative critical-illnesses, including those requiring hemodynamic and ventilatory support;
 - VI.A.2.l) renal disorders in the critical care unit, including electrolyte and acid-base disturbance and acute renal failure;
 - VI.A.2.m) respiratory failure, including acute respiratory distress syndrome, acute and chronic respiratory failure in obstructive lung diseases, and neuromuscular respiratory drive disorders;
 - VI.A.2.n) sepsis and sepsis syndrome;
 - VI.A.2.o) severe organ dysfunction resulting in critical illness, including

- VI.A.2.o).(1) disorders of the gastrointestinal, neurologic, endocrine, hematologic, musculoskeletal, and immune systems, as well as infections and malignancies; and,
- VI.A.2.o).(2) shock syndromes.
- VI.A.3. interpretation of data derived from various bedside devices commonly employed to monitor patients; and,
- VI.A.4. procedural and technical skills, including:
 - VI.A.4.a) airway management;
 - VI.A.4.b) the use of a variety of positive pressure ventilatory modes, to include:
 - VI.A.4.b).(1) initiation, maintenance, and weaning off of ventilatory support;
 - VI.A.4.b).(2) respiratory care techniques; and,
 - VI.A.4.b).(3) withdrawal of mechanical ventilatory support.
 - VI.A.4.c) the use of reservoir masks and continuous positive airway pressure masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry;
 - VI.A.4.d) therapeutic flexible fiber-optic bronchoscopy procedures limited to indications for therapeutic removal of airway secretions, diagnostic aspiration of airway secretions or lavaged fluid, or airway management;
 - VI.A.4.d).(1) Each fellow must perform a minimum of 50 such procedures.
 - VI.A.4.e) diagnostic and therapeutic procedures, to include paracentesis, lumbar puncture, thoracentesis, endotracheal intubation, and related procedures;
 - VI.A.4.f) use of chest tubes and drainage systems;
 - VI.A.4.g) insertion of arterial, central venous, and pulmonary artery balloon flotation catheters;

- VI.A.4.h) operation of bedside hemodynamic monitoring systems;
- VI.A.4.i) emergency cardioversion;
- VI.A.4.j) interpretation of intracranial pressure monitoring;
- VI.A.4.k) nutritional support;
- VI.A.4.l) use of ultrasound techniques to perform thoracentesis and place intravascular and intracavitary tubes and catheters; and,
- VI.A.4.m) use of transcutaneous pacemakers.

VI.B. Medical Knowledge

Fellows 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.

- VI.B.1. Fellows must demonstrate knowledge of the scientific method of problem solving and evidence-based decision making.
- VI.B.2. Fellows must demonstrate knowledge of indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline, including the appropriate indication for and use of screening tests/procedures, to include:
 - VI.B.2.a) pericardiocentesis;
 - VI.B.2.b) placement of percutaneous tracheostomies;
 - VI.B.2.c) imaging techniques commonly employed in the evaluation of patients with critical illness, including ultrasound;
 - VI.B.2.d) screening tests and procedures; and,
 - VI.B.2.e) renal replacement therapy.
- VI.B.3. Fellows must demonstrate knowledge of:
 - VI.B.3.a) the basic sciences, with particular emphasis on biochemistry and physiology, including cell and molecular biology and immunology, as they relate to critical care medicine;

- VI.B.3.b) the ethical, economic, and legal aspects of critical illness;
- VI.B.3.c) the psychosocial and emotional effects of critical illness on patients and their families;
- VI.B.3.d) the recognition and management of patients critically-ill from disasters, including those caused by chemical and biological agent inhalation and trauma;
- VI.B.3.e) the use of paralytic agents and sedative and analgesic drugs in the critical care unit;
- VI.B.3.f) detection and prevention of iatrogenic and nosocomial problems in critical care medicine; and,
- VI.B.3.g) monitoring and supervising special services, including:
 - VI.B.3.g).(1) respiratory care techniques and services; and,
 - VI.B.3.g).(2) pharmacokinetics, pharmacodynamics, and drug metabolism and excretion in critical illness.

VI.C. Practice-based Learning and Improvement

Fellows 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 life-long learning. Fellows must develop skills and habits to meet the following goals:

- VI.C.1. obtain procedure-specific informed consent by competently educating patients about rationale, technique, and complications of procedures.

VI.D. Interpersonal and Communication Skills

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

VI.E. Professionalism

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Fellows must demonstrate:

- VI.E.1. high standards of ethical behavior, including maintaining appropriate professional boundaries and relationships with other physicians and other health care team members, and avoiding conflicts of interest.

VI.F. Systems-based Practice

Fellows 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. Fellows must:

- VI.F.1. participate in quality improvement and patient safety activities in the intensive care unit (ICU); and,
- VI.F.2. acquire skills required to organize, administer, and direct a critical care unit.