



ACGME International

**Advanced Specialty Program Requirements for
Graduate Medical Education in
Vascular Surgery Integrated (Residency) or
Independent (Fellowship)**

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Int. Introduction

Background and Intent: Programs must achieve and maintain Foundational Accreditation according to the ACGME-I Foundational Requirements prior to receiving Advanced Specialty Accreditation. The Advanced Specialty Requirements noted below complement the ACGME-I Foundational Requirements. For each section, the Advanced Specialty Requirements should be considered together with the Foundational Requirements.

Int. I. Definition and Scope of the Specialty

Vascular surgeons provide comprehensive care to patients with conditions caused by occlusive, aneurysmal, inflammatory, traumatic (both iatrogenic and non-iatrogenic), compressive, and other etiologies of the arterial, venous, and lymphatic circulatory systems, exclusive of those circulatory vessels intrinsic to the heart and brain. Comprehensive care requires expertise in evaluation, diagnosis, operative (including open, endovascular, and hybrid approaches), and non-operative treatment of patients with acute and chronic vascular disease. Vascular surgeons demonstrate technical expertise and surgical judgement to provide care across a spectrum of health care settings, ranging from highly specialized to resource-limited environments.

Vascular surgeons are professionals. Professionalism includes high ethical standards, stress tolerance, and empathy. Vascular surgeons promote sustainable delivery of vascular care through resource stewardship and identify and mitigate the effects of health care disparities on patient outcomes. They recognize the importance of personal well-being and use skill sets that promote resilience, work-life integration, and career longevity.

Vascular surgeons are patient centered and provide humanistic, ethical, and value-directed care. They emphasize primary and secondary prevention of disability and death while providing education that prioritizes quality of life. Vascular surgeons diagnose and treat patients in a holistic and longitudinal manner, using the entire spectrum of available treatment options. Their judgement and expertise in the medical management of vascular disease, in addition to their interventional education and training, allow them to lead complex, shared decision-making and offer patients the most appropriate treatment options while focusing on the long-term implications of each choice.

Vascular surgeons are critical for multidisciplinary management of patients. They are leaders in the care of patients with wounds, venous disease, and chronic limb-threatening ischemia. Vascular surgeons focus on limb salvage and preservation of function, performing amputations when necessary. They work with other clinicians by providing vascular exposure, managing iatrogenic and traumatic vascular injury, and restoring blood flow to ischemic tissue. Vascular surgeons play a significant role in the provision and maintenance of vascular access and the care of critically ill patients. They are proficient in the acquisition and interpretation of vascular

laboratory and imaging studies.

Vascular surgeons are scholars. They contribute to and analyze the scientific literature, including translational science. They practice evidence-based care, interpret and report patient-centered outcomes, and utilize data management science for ongoing professional learning and continuous quality improvement. Vascular surgeons are creative and adaptive lifelong learners who design and assimilate new technologies and scientific advances. Vascular surgeons are committed educators. They communicate fluently and clearly explain complex data and concepts to all stakeholders, especially patients and their surrounding communities.

Int. II. Duration of Education

Int. II.A. The educational program in vascular surgery for integrated (residency) programs must be 60 or 72 months in length.

Int. II.B. The educational program in vascular surgery for independent (fellowship) programs must be 24 or 36 months in length.

I. Institution

I.A. Sponsoring Institution

See International Foundational Requirements, Section I.A.

I.B. Participating Sites

I.B.1. Geographically remote participating sites must provide audio visual access to conferences and lectures at the central location or document provision of an equivalent educational program of lectures and conferences.

I.B.2. Participating sites should be geographically proximate to the primary clinical site to allow all residents and fellows to attend conferences, basic science lectures, and morbidity and mortality reviews on a regular and documented basis at a central location.

II. Program Personnel and Resources

II.A. Program Director

II.A.1. The program director's initial appointment should be for the length of the program plus one year.

II.B. Faculty

II.B.1. The members of the program's faculty must reflect sufficient variety of interests and capabilities to represent the many facets of vascular surgery.

II.B.2. The majority of core faculty members must be vascular surgeons.

II.C. Other Program Personnel

See International Foundational Requirements, Section II.C.

II.D. Resources

- II.D.1. The institutional volume and variety of open and endovascular operative experience must be adequate to ensure a sufficient number and distribution of complex cases (as determined by the Review Committee-International) for each resident and/or fellow in the program.
- II.D.2. Institutions must include facilities and staff members for a variety of other services that provide a critical role in the care of patients with vascular conditions, including cardiovascular services, critical care services, general surgery services, nephrology services, neurology services, and radiology services.
- II.D.3. The Sponsoring Institution and program must jointly ensure the availability of adequate resources for residents and/or fellows to have substantial experience in interpreting results of:
 - II.D.3.a) abdominal and visceral vascular imaging;
 - II.D.3.b) extracranial cerebrovascular testing;
 - II.D.3.c) non-invasive vascular laboratory testing; and,
 - II.D.3.d) peripheral arterial and peripheral venous testing.
- II.D.4. Technology must be available to support the education of residents and/or fellows, including:
 - II.D.4.a) online radiographic and laboratory reporting systems at the primary clinical site and all participating sites; and,
 - II.D.4.b) software resources for production of presentations, manuscripts, and portfolios.

III. Resident Appointment

III.A. Eligibility Criteria

- III.A.1. To be eligible for appointment to an integrated (residency) program, residents must have successfully fulfilled eligibility requirements outlined in the Foundational Requirements for residency programs.
- III.A.2. To be eligible for appointment to an independent (fellowship) program, fellows must have completed an ACGME-I-accredited program in surgery or thoracic surgery, or a surgery or thoracic surgery program acceptable to the Sponsoring Institution's Graduate Medical Education Committee.
 - III.A.2.a) Within the first six weeks of the program, fellows who have not completed an ACGME-I-accredited residency program must have a

comprehensive assessment of their surgical skills with development of an individualized learning plan as needed.

III.B. Number of Residents

See International Foundational Requirements, Section III.B.

III.C. Resident Transfers

See International Foundational Requirements, Section III.C.

III.D. Appointment of Fellows and Other Learners

See International Foundational Requirements, Section III.D.

IV. Specialty-Specific Educational Program

IV.A. ACGME-I Competencies

IV.A.1. The program must integrate the following ACGME-I Competencies into the curriculum.

IV.A.1.a) Professionalism

IV.A.1.a).(1) Residents/fellows must demonstrate a commitment to professionalism and an adherence to ethical principles. Residents/fellows must demonstrate:

IV.A.1.a).(1).(a) compassion, integrity, and respect for others;

IV.A.1.a).(1).(b) responsiveness to patient needs that supersedes self-interest;

IV.A.1.a).(1).(c) cultural awareness;

IV.A.1.a).(1).(d) respect for patient privacy and autonomy;

IV.A.1.a).(1).(e) accountability to patients, society, and the profession;

IV.A.1.a).(1).(f) respect and responsiveness to heterogeneous patient populations, including but not limited to gender, age, culture, race, religion, disabilities, national origin, socioeconomic status, and sexual orientation;

IV.A.1.a).(1).(g) ability to recognize and develop a plan for one's own personal and professional well-being; and,

IV.A.1.a).(1).(h) appropriately disclosing and addressing conflict or duality of interest.

IV.A.1.b) Patient Care and Procedural Skills

IV.A.1.b).(1)	Residents/fellows must provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents/fellows must demonstrate competence in:
IV.A.1.b).(1).(a)	synthesizing all relevant patient data to arrive at an organized, hierarchical differential diagnosis for complex common and rare disease processes, to include primary and secondary treatment options;
IV.A.1.b).(1).(b)	providing care in a comprehensive and longitudinal manner; and,
IV.A.1.b).(1).(c)	providing medical and procedural care in a logical, step-wise manner informed by available evidence-based guidelines.
IV.A.1.b).(2)	Residents/fellows must be able to perform all medical diagnostic, and surgical procedures considered essential for the area of practice.
IV.A.1.b).(2).(a)	Residents/fellows must demonstrate the ability to accurately interpret a range of non-invasive vascular laboratory studies.
IV.A.1.c)	Medical Knowledge
IV.A.1.c).(1)	Residents/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, including:
IV.A.1.c).(1).(a)	knowledge of anatomy, biology, embryology, microbiology, physiology, and pathology as they relate to the pathophysiology, diagnosis, and treatment of vascular lesions;
IV.A.1.c).(1).(b)	knowledge and application of the scientific method to adapting and evaluating new and existing interventional and non-interventional strategies;
IV.A.1.c).(1).(c)	knowledge of and the ability to convey safety and relative risk concepts to patients, patients' families, and the other members of the health care team regarding benefits and hazards of ionizing radiation, therapeutic, and diagnostic interventions, including pharmaceuticals and invasive and non-invasive procedures;
IV.A.1.c).(1).(d)	knowledge of and the ability to critically appraise and apply evidence,

	even when conflicting and incomplete, to guide care tailored to the individual patient;
IV.A.1.c).(1).(e)	knowledge of methods and techniques of angiography, computed tomography (CT) scanning, magnetic resonance imaging (MRI), magnetic resonance angiography (MRA), and other vascular imaging modalities; and,
IV.A.1.c).(1).(f)	knowledge of the roles of different specialists and other health care professionals in overall patient management.
IV.A.1.d)	Practice-Based Learning and Improvement
IV.A.1.d).(1)	Residents/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 lifelong learning. Residents/fellows must demonstrate competence in:
IV.A.1.d).(1).(a)	identifying and performing appropriate learning activities;
IV.A.1.d).(1).(b)	identifying strengths, deficiencies, and limits in one's knowledge and expertise;
IV.A.1.d).(1).(c)	incorporating formative evaluation feedback into daily practice;
IV.A.1.d).(1).(d)	locating, appraising, and assimilating evidence from scientific studies related to their patients' health problems;
IV.A.1.d).(1).(e)	setting learning and improvement goals, and regularly assessing their strengths, weaknesses, and progress in achieving those learning goals; and,
IV.A.1.d).(1).(f)	systematically analyzing practice using quality improvement methods and implementing changes with the goal of practice improvement.
IV.A.1.e)	Interpersonal and Communication Skills
IV.A.1.e).(1)	Residents/fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, patients' families, and health professionals. Residents/fellows must demonstrate competence in:
IV.A.1.e).(1).(a)	communicating effectively with patients and patients'

	families, as appropriate, across a broad range of socioeconomic circumstances, cultural backgrounds, and language capabilities, learning to engage interpretive services as required to provide appropriate care to each patient;
IV.A.1.e).(1).(b)	communicating effectively with physicians, other health professionals, and health-related agencies;
IV.A.1.e).(1).(c)	working effectively as a member or leader of a health care team or other professional group;
IV.A.1.e).(1).(d)	acting in a consultative role to other physicians and health professionals;
IV.A.1.e).(1).(e)	maintaining comprehensive, timely, and legible medical records, if applicable;
IV.A.1.e).(1).(f)	educating patients and patients' families, students, other residents/fellows, and other health professionals; and,
IV.A.1.e).(1).(g)	communicating effectively with patients, patients' families to partner with them to assess their care goals, including, when appropriate, end-of-life goals.
IV.A.1.f)	Systems-Based Practice
IV.A.1.f).(1)	Residents/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. Residents/fellows must:
IV.A.1.f).(1).(a)	work effectively in various health care delivery settings and systems relevant to their clinical specialty;
IV.A.1.f).(1).(b)	coordinate patient care within the health care system relevant to their clinical specialty;
IV.A.1.f).(1).(c)	incorporate considerations of value, cost awareness, delivery and payment and risk-benefit analysis in patient and/or population- based care as appropriate;
IV.A.1.f).(1).(d)	advocate for quality patient care and optimal patient care systems;
IV.A.1.f).(1).(e)	demonstrate competence in understanding health care finances and their impact on individual patients' health decisions;

- IV.A.1.f).(1).(f) participate in identifying system errors and implementing potential systems solutions;
- IV.A.1.f).(1).(g) demonstrate competence in using tools and techniques that promote patient safety and disclosure of patient safety events (real or simulated);
- IV.A.1.f).(1).(h) advocate for patients within the health care system to achieve the patients' and patient's family's care goals, including, when appropriate, end-of-life goals.

IV.B. Regularly Scheduled Educational Activities

- IV.B.1. Regular organized clinical teaching must occur.
- IV.B.2. Conferences must include a review, held at least twice monthly, of all current complications and deaths, including radiological and pathological correlation of surgical specimens and autopsies when relevant.
- IV.B.3. A course or a structured series of conferences must be included that ensures coverage of the basic and clinical sciences fundamental to vascular surgery, as well as the technological advances that relate to vascular surgery and the care of patients with vascular diseases.
- IV.B.4. Regular review of recent literature in a journal club format must occur.
- IV.B.5. Residents/fellows must actively participate in the planning and presentation of required conferences.
- IV.B.5.e) Each resident/fellow must attend at least 75 percent of all required conferences.
- IV.B.5.f) At least 50 percent of the core faculty members, in aggregate, must attend program conferences.

IV.C. Clinical Experiences

- IV.C.1. Assignment of rotations must be structured to minimize the frequency of rotational transitions, and rotations must be of sufficient length to provide a quality educational experience, defined by continuity of patient care, ongoing supervision, longitudinal relationships with faculty members, and meaningful assessment and feedback.
- IV.C.1.a) Resident/fellow clinical rotations must be a minimum of four weeks in duration.
- IV.C.2. The curriculum for each fellow in an independent (fellowship) program must include 24 months of vascular surgery.
- IV.C.3. The curriculum for each resident in an integrated (residency) program must include at least:

- IV.C.3.a) 12 months of foundational educational experience that best suits each program's unique environment to be chosen from among the following: abdominal and alimentary tract surgery; anesthesia; burn surgery; cardiothoracic surgery; critical care; endocrine surgery; general surgery; head and neck surgery; neurological surgery; orthopaedic surgery; pediatric surgery; plastic surgery; surgical oncology; transplantation; trauma; and, urology.
- IV.C.3.a) (1) The foundational experience must include pre- and post-operative evaluation and care; critical care and trauma management; and basic technical experience in skin and soft tissue, abdomen and alimentary track, airway management, and cardiothoracic surgery.
- IV.C.3.b) 36 months of core educational experiences concentrated in vascular surgery (which could include experience in the vascular lab); and,
- IV.C.3.c). 12 months of educational experiences that may be a combination of:
- IV.C.3.c).(1) a maximum of six months of vascular surgery-related rotations, such as cardiovascular medicine (diagnostic and/or interventional), radiology (diagnostic and/or interventional), podiatry, physical medicine and rehabilitation, nephrology, and dedicated research;
- IV.C.3.c).(2) a maximum of 12 additional months in foundational surgery rotations; and,
- IV.C.3.c).(3) a maximum of 12 additional months of core vascular surgery rotations.
- IV.C.4. All educational experiences must be documented.
- IV.C.5. Resident/fellow operative and critical care experience must meet the minimums specified by the Review Committee-International.
- IV.C.5.a) Excessive operative experience, as specified by the Review Committee-International, must be justified by the program director.
- IV.C.6. The curriculum for each resident/fellow must include a final 12 months with chief resident responsibility on the vascular surgery service at the primary clinical site or at a participating site.
- IV.C.6.a) Vascular surgery chief residents must not share primary responsibility for the same patient with another learner.
- IV.C.7. Resident/fellow experiences must include primary responsibility for continuity of patient care, including ambulatory care, inpatient care, referral and consultation, and utilization of community resources.
- IV.C.8. Resident/fellow experiences must include progressive senior surgical

responsibilities in the total care of vascular surgery patients, including pre-operative evaluation, therapeutic decision-making, operative experience, and post-operative management.

- IV.C.9. Resident/fellow experiences must include participation in providing consultation with faculty member supervision.
- IV.C.9.a) Residents/fellows should have clearly defined educational responsibilities for other residents, medical students, and professional personnel.
- IV.C.10. Resident/fellow experiences must include experience in the application, assessment, and limitations of non-invasive vascular diagnostic techniques.
- IV.C.10.a) The program must provide didactic and clinical education and training in non-invasive vascular diagnostic testing and interpretation.
- IV.C.10.b) Such education must include experiences integrating these skills into diagnostic decision-making for patient care and must not be achieved solely through attendance at off-site review or test preparation courses.
- IV.C.11. Resident/fellow experiences must include experience with outpatient (non-procedural) activities.
- IV.C.11.a) Residents/fellows must devote an average of at least one half-day per week to outpatient activities.
- IV.C.12. Resident/fellow experiences must include procedural care delivered across a spectrum of settings/sites of service, such as inpatient hospital or outpatient office-based labs.
- IV.C.13. Resident/fellow experiences must include evaluation and management of vascular trauma, iatrogenic vascular injuries, and crisis management.
- IV.C.14. Resident/fellow experiences must include instruction and/or experience in advocacy, which can include, but is not limited to topics such as reimbursement, payment policy, shared decision-making, and appropriate use.
- IV.C.15. As residents/fellows progress through the educational program, they must be provided with increasing responsibility based on performance on competency-based evaluation tools so as to promote graduated autonomy in the operating room and in the peri-operative care of patients.
- IV.C.16. When justified by experience, senior resident/fellows should serve as teaching assistants to more junior resident/fellows in vascular or general surgery.

IV.D. Scholarly Activity

- IV.D.1. Residents/fellows must have instruction in critical thinking, design of experiments, and evaluation of data.
- IV.D.2. Residents/fellows should participate in clinical and/or laboratory research.

V. Evaluation

V.A. Resident Evaluation

- V.A.1. The semi-annual assessment must include a review of each resident's/fellow's operative experience to ensure breadth and balance of experience in the surgical care of vascular diseases.
- V.A.2. The program director must ensure that the operative experience of individual residents/fellows in the same program is aligned to each individual's progress toward competence.

V.B. Clinical Competency Committee

- V.B.1. The program director or their designee, with input from the Clinical Competency Committee, must assess resident/fellow acquisition and maintenance of technical and non-technical skills using competency-based evaluations that begin in the first year of the program.
 - V.B.1.a) The assessment should include formative resident/fellow feedback, evidence of learning and development, and include directly observed evidence for summative judgments.

V.C. Faculty Evaluation

See International Foundational Requirements, Section V.C.

V.D. Program Evaluation and Improvement

See International Foundational Requirements, Section V.D.

V.E. Program Evaluation Committee

See International Foundational Requirements, V.E.

VI. The Learning and Working Environment

VI.A. Principles

See International Foundational Requirements, VI.A.

VI.B. Patient Safety

See International Foundational Requirements, VI.B.

VI.C. Quality Improvement

See International Foundational Requirements, VI.C.

VI.D. Supervision and Accountability

- VI.D.1. The program must define those physician tasks for which PGY-1 residents in the integrated (residency) program may be supervised indirectly, with direct supervision available, and must define “direct supervision” in the context of the program.
- VI.D.2. The program must define those physician tasks for which PGY-1 residents in the integrated (residency) program must be supervised directly until they have demonstrated competence as defined by the program director, and must maintain records of such demonstrations of competence.
- VI.D.3. As residents/fellows progress through levels of increasing competence and responsibility, work assignments must keep pace with their advancement.
- VI.D.4. Lines of authority should be defined by programs, and all residents/fellows must have a working knowledge of these expected reporting relationships to maximize quality care and patient safety.

VI.E. Professionalism

- VI.E.1. The workload associated with optimal clinical care of surgical patients must function as a continuum from the moment of admission to the point of discharge.
- VI.E.2. Residents/fellows must collaborate with other surgical residents/fellows, with faculty members, other physicians outside of their specialty, and non-traditional health care practitioners, to best formulate treatment plans for an increasingly heterogeneous patient population.
- VI.E.3. Residents/fellows must assume personal responsibility to complete all tasks to which they are assigned (or which they voluntarily assume) in a timely fashion.
- VI.E.3.a) These tasks must be completed in the hours assigned, or, if that is not possible, residents/fellows must learn and utilize the established methods for handing off remaining tasks to another member of the resident/fellow team so that patient care is not compromised.
- VI.E.4. Surgical teams should be made up of attending surgeons, fellows and residents at various PG levels (when appropriate), medical students (when appropriate), and other qualified health professionals.
- VI.E.5. The work of the caregiver team should be assigned to team members based on each member’s level of education, experience, and competence.

VI.F. Well-Being

See International Foundational Requirements, VI.F.

VI.G. Fatigue

See International Foundational Requirements, VI.G.

VI.H. Transitions of Care

See International Foundational Requirements, VI.H.

VI.I. Clinical Experience and Education

See International Foundational Requirements, VI.I.

VI.J. On-Call Activities

- VI.J.1. Night float rotations must not exceed two consecutive months, or three consecutive months for rotations with night shifts alternating with day shifts.
- VI.J.2. There can be no more than four months of night float per year.
- VI.J.3. There must be at least two months between each night float rotation.
- VI.J.4. Night float must not exceed three months per year averaged over the duration of the educational program.