ACS Vascular-VP

Vascular Verification Program
American College of Surgeons

Optimal Resources for **Vascular Surgery & Interventional Care**

2023 Vascular-VP Inpatient Standards

Released March 2023

A Quality Program with

SVS Society for Vascular Surgery

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Table of Contents

Important Information

These standards are intended solely as qualification criteria for the American College of Surgeons Vascular Verification Program (Vascular-VP). They do not constitute a standard for care and are not intended to replace the medical judgment of the surgeon or health care professional in individual circumstances.

In addition to verifying compliance with the standards as written in this manual, the Vascular-VP may consider other factors not stated herein when reviewing a hospital or hospital system for verification and reserves the right to grant or withhold verification based on its judgement of the totality of the program.

Executive Summary

The American College of Surgeons (ACS) and the Society for Vascular Surgery (SVS) are pleased to present the Vascular Verification Program, a national quality verification program focused on the care and treatment of patients receiving vascular surgical and interventional care.

The diverse range of care required by the vascular patient presented unique opportunities in the design of this program. Vascular procedures can be open or endovascular; arterial, venous, or lymphatic; and can vary greatly in the level of complexity. Given the breadth of scope and complexity of vascular procedures, there has been increased emphasis on the choice between vascular procedures and the outcomes of such selections.

ACS has a long history of establishing quality verification programs which result in improvement in patient care and outcomes in specialties including cancer, trauma, and metabolic/bariatric surgery, among others. Similarly, the SVS has been at the forefront of establishing practice guidelines and education with the aim of achieving ever-better care and outcomes for the vascular patient. Grounded in the four-part framework that is the staple of other ACS accreditation/verification programs, ACS and SVS sought to evaluate and improve the quality of care through (1) program-specific standards; (2) infrastructure needed to meet such standards and deliver high-quality, high-value care; (3) data collection and analysis; and (4) verification site visits to ensure proper implementation and maintenance of components one through three. This program, a collaborative effort between the ACS and SVS over the last five years to leverage the expertise and experience of both organizations in the field of quality improvement, aims to achieve similar growth and outcomes in the field of vascular surgical and interventional care as those demonstrated by other established ACS quality programs.

The Standards contained herein cover a breadth of topics deemed valuable in the provision of complex and routine care, both in general across institutions and specific to the care of the vascular patient. Focus areas include institutional commitment, program resources, clinical continuity across the five phases of care, data collection and analysis, and quality improvement activities. Given the diversity of care in this specialty area, the program offers two inpatient levels: Comprehensive Inpatient (highly complex) and Verified Inpatient (moderately complex). Facilities participating in this program will be expected to show their commitment across all areas relevant to their selected level, with the ideal goal of providing feedback to assist all healthcare institutions on their journey to an ever-higher standard of quality care.

Drawing from background evidence, nationwide pilot site visits, and the expertise of providers and organizations in the field, *Optimal Resources for Vascular Surgery and Interventional Care* outlines requirements necessary for facilities to achieve and maintain verification for their vascular program. Through ongoing participation in this program and compliance with the standards, facilities can develop the tools necessary to provide safe, effective, patient-centered, timely, efficient, and equitable care to all vascular patients.

Background on ACS and SVS

About the American College of Surgeons

The American College of Surgeons (ACS) is a scientific and educational organization of surgeons that was founded in 1913 to raise the standards of surgical practice and improve the quality of care for all surgical patients. The College is dedicated to the ethical and competent practice of surgery. Its achievements have significantly influenced the course of scientific surgery in America and have established it as an important advocate for all surgical patients. The College has more than 84,000 members and is the largest organization of surgeons in the world. For more information, visit facs.org.

About the Society for Vascular Surgery

The Society for Vascular Surgery® (SVS) seeks to advance excellence and innovation in vascular health through education, advocacy, research, and public awareness. The organization was founded in 1946 and currently has a membership of more than 6,000. SVS membership is recognized in the vascular community as a mark of professional achievement.

Acknowledgments

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Institutional Administrative Commitment (IAC)

IAC.1 Hospital Commitment

Definition and Requirements

All Levels

Hospital leaders demonstrate commitment through engaged leadership and financial resources to support the Vascular Program and ensure alignment with the hospital's strategic priorities.

There is top-level leadership commitment to quality and safety within the Vascular Program and appropriate allocation of resources through demonstration of the following:

- Resource allocation to and engagement with the Vascular Program
- Hospital-level leadership has established formal channels for effective communication to align with Vascular Program priorities
- Mechanisms for feedback from ongoing vascular initiatives and quality and safety issues to hospital-level leadership

Documentation

- Provide a letter from hospital leadership (for example, CEO or equivalent) demonstrating the commitment to the Vascular Program, which includes:
  - A high-level description of the Vascular Program, including program leadership, annual volume, procedure mix, and commitment and organization of multidisciplinary care services for vascular patients
  - Any initiatives involving the Vascular Program in the previous 12 months initiated for the purposes of ensuring quality and safety
  - Hospital leadership's involvement with the Vascular Program
  - Current and future commitment to and financial investment in the Vascular Program
  - The hospital's commitment to maintaining compliance with verification program standards
- Provide an organizational diagram showing the Vascular Program's relationships to other departments and internal governing bodies, specifically those that oversee patient safety, quality, and fiscal administration of the Vascular Program

Resource

Hoyt DB, Ko CY (2017). Chapter 1: Optimal resources for quality and safety: An introduction. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 17–24.

IAC.2 Culture of Patient Safety and High-Reliability

Definition and Requirements

All Levels

There is an organized effort to create a culture of patient safety and high reliability within the Vascular Program. Exemplary programs will have systems in place to evaluate and continuously improve culture.

A hospital's culture reflects the aggregate attitude and values of its leaders and members and sets the climate for how patient safety is perceived and reinforced. The culture of a patient care hospital has been described as a five-step ladder model, including the following five designations:

- **Passive:** Adverse events are expected or considered unavoidable
- **Reactive:** Presence of systems to address sentinel events when they occur, without active surveillance
- **Calculative:** Presence of systems to prevent problems and actively surveil for sentinel events
- **Proactive:** Presence of systems to proactively anticipate both sentinel events and morbidities
- **Generative:** Quality and safety at the core of every aspect of infrastructure

Actively pursuing a generative safety culture is core to the hospital's mission. This culture, as well as the practice of high-reliability principles, is embedded and identifiable throughout the institution. There is safety culture training and regular, formal assessment of safety culture across all vascular care providers. Results drive tailored improvement initiatives and ongoing safety culture education.

This commitment to a culture of patient safety and high-reliability is demonstrated by the following:

- Ongoing measurement of safety culture with feedback to frontline staff and demonstrated effort to act on the basis of measured results
- Results of safety culture surveys are communicated to vascular staff
- Training on safety culture as part of onboarding process for new staff and ongoing maintenance of training for existing staff
- Robust mechanisms in place for monitoring and management of safety events, including regular and robust monitoring of event-reporting data, such as the capture of and education on near misses, safety huddles, and broadly distributed safety dashboards
- Continuous effort to improve the safety culture with the goal of creating a generative culture, where quality and safety are at the core of every aspect of the hospital's infrastructure

Documentation

- Provide reports from safety culture assessments (for example, Safety Attitudes Questionnaire [SAQ] and Hospital Survey on Patient Safety Culture [HSOPS]) in which the vascular service participated over the previous three years, if any
- Provide most recent quality dashboard with vascular-specific measures, if any
- Provide a listing of recent training/education initiatives for the vascular team on safety culture/safety attitudes, including dates of training (for example, TeamSTEPPS)

Resources

Clarke JR, Shabot MM. Chapter 8: Patient safety and high reliability: Establishing the infrastructure. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 97-106.

Elster EA, Makary MA, Saldinger PF, and Schumacher MG. Chapter 7: Creating a culture that is focused on safety and high reliability. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 85-96.

Hu QL, et al. Evidence review for the American College of Surgeons Quality Verification Part I: Building quality and safety resources and infrastructure. *J Am Coll Surg*. November 2020;231(5):557–569.

Hudson, P. Implementing a safety culture in a major multinational institution. *Safety Science*. 2007;45(6):697–722.

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Program Scope and Governance (PSG)

PSG.1 Definition and Scope of a Vascular Program

Definition and Requirements

All Levels

A Vascular Program can be established in a variety of inpatient hospital settings and encompasses all vascular care at the institution. These standards are designed to address the care provided in all phases of care for the vascular patient regardless of setting.

The following levels of verification are offered:

- Comprehensive Inpatient
- Verified Inpatient

The verification level is indicated by a hospital's infrastructure and staffing to perform a set of procedures. It does not mandate that a hospital perform every procedure noted in the program scope table below. The Vascular Program must have a written scope of practice that aligns with the selected verification level and addresses resources and care requirements within the designated setting.

Documentation

- Provide the Vascular Physician Roster Pre-Review Questionnaire table
- Provide the Vascular Case Volume Pre-Review Questionnaire table that includes all vascular interventions performed at the hospital
- Provide the hospital's written scope of practice for the vascular service
- Provide any policies or protocols detailing criteria for selecting appropriate procedures for the hospital setting
- Provide any policies or protocols detailing criteria for selecting appropriate patients for the hospital setting

PROGRAM SCOPE TABLE

Anatomical Region	Method	Verification Level		
		Comprehensive Inpatient	Verified Inpatient	Verified Outpatient
Aortic Arch and Proximal Brachiocephalic Vessels	Open	X		
Descending Thoracic Aorta	Open	X		
Visceral Aorta - Thoracoabdominal	Open	X		
Visceral Aorta (FEVAR, periscopes, etc.)	Endo	X		
Brachiocephalic Vessels (Innominate, CCA, SCA)	Endo	X	X	
Descending Thoracic Aorta	Endo	X	X	
Visceral Vessels (hepatic, splenic, renals, SMA, etc.)	Open	X	X	
Visceral Vessels (hepatic, splenic, renals, SMA, etc.)	Endo	X	X	
Aortoiliac	Open	X	X	
Aortoiliac	Endo	X	X	X
Infrainguinal Arterial	Open	X	X	
Infrainguinal Arterial	Endo	X	X	X
Upper Extremity Arterial	Open	X	X	
Upper Extremity Arterial	Endo	X	X	X
Carotid-Vertebral	Open	X	X	
Carotid-Vertebral	Endo	X	X	
Thrombolytic Infusion	Endo	X	X	
Surgical Thrombectomy (arterial/venous)	Open	X	X	X
AV Access	Open	X	X	X
AV Access	Endo	X	X	X
Superficial Venous	Open	X	X	X
Superficial Venous	Endo	X	X	X
Deep Venous	Open	X	X	X
Deep Venous	Endo	X	X	X

PSG.2 Vascular Program Medical Director

Definition and Requirements

All Levels

The Vascular Program Medical Director is a qualified physician leader who has demonstrated appropriate training, experience, authority, and commitment to effectively lead the program. The Medical Director maintains oversight and accountability for clinical care and quality across the Vascular Program, including the following:

1. Reviews mortality and adverse event rates, including subsequent distribution of review findings
2. Addresses clinical practice variation
3. Establishes quality and safety standards and guidelines for use in the Vascular Program
4. Monitors primary clinical outcomes data to identify issues
5. Develops and implements vascular-specific quality improvement initiatives
6. Provides strategic leadership and prioritization of vascular quality initiatives and goals
7. Provides oversight and leadership of the Vascular Program Committee
8. Participates in governance, including approving vascular privileges for surgeons and interventionalists

Documentation

- Provide official job description for the Vascular Program Medical Director position, including percentage of full-time employment specific to this role
- Provide an organizational diagram inclusive of the Medical Director position listed above, as well as all other Vascular Program staff (Standard PSG.3) that illustrates the reporting structure and relationships to institutional leadership
- Provide the curriculum vitae for the individual serving as the Medical Director

PSG.3 Vascular Program Management Resources

Definition and Requirements

All Levels

Program management, quality improvement, and clinical data abstraction/analysis roles and responsibilities must be established within the Vascular Program. These may be fulfilled by either full- or part-time dedicated employees and can be joined or split depending on the size and organization of the hospital. Official job descriptions must reflect the responsibilities outlined below and support dedicated time and compensation commensurate to duties assigned.

- **Vascular Program Manager:** An individual, either clinical or nonclinical with appropriate experience, dedicated to managing and coordinating the administrative functions of the program and supporting the Medical Director. The Program Manager role provides oversight of program support, including but not limited to:
  - Establishing and maintaining a collaborative working relationship with the Medical Director to assist with program needs and goals
  - Establishing and maintaining a functional system of collaboration for programmatic, data, and quality improvement (QI) needs
  - Management of administrative functions within the Vascular Program, including supporting committee meetings and ensuring adequate program resources
- **Quality Improvement Support:** There must be dedicated support for vascular-specific quality improvement activities either through an individual or team within the Vascular Program or at the hospital level. The designated individual/team should have demonstrable and appropriate training, experience, and success in quality improvement methodology and leading data-driven QI initiatives.
- **Clinical Data Abstraction and Analysis:** There must be support for clinical data abstraction and analysis specific to the Vascular Program, either through an individual within the Vascular Program or at the hospital level, or through a contracted service. There should be demonstrable and appropriate training, experience, and maintenance of necessary certifications and database access to abstract, analyze, and report on data relevant to the program. Clinical data abstraction and quality improvement support functions work closely together to ensure data accuracy and meaningful QI initiatives.

Documentation

- Provide official job descriptions for each of the job functions outlined within the standard

Resources

Hoyt DB, Ko CY (2017). Chapter 1: An introduction. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety.* American College of Surgeons; 17–24.

American College of Surgeons. ACS Quality Improvement Course: The Basics. Available at: https://www.facs.org/quality-programs/quality-improvement-education/qi-basics-course/. Accessed July 24, 2023.

PSG.4 Vascular Program Committee

Definition and Requirements

All Levels

The Vascular Program Committee is comprised of the vascular program medical director, program manager, quality improvement support representative, clinical data abstraction and analysis representative(s), vascular surgeons and interventionalists, an anesthesiology representative, a non-invasive vascular lab representative, and multidisciplinary care team members that serve vascular patients. The committee provides infrastructure that fosters communication throughout the Vascular Program and within the larger hospital.

The committee oversees and facilitates quality improvement efforts within the Vascular Program, ensuring that a multidisciplinary perspective guides these activities. The committee meets at minimum quarterly and serves three primary functions:

- Provide program administrative and operational oversight (including protocol review and development)
- Conduct retrospective case review, outcomes data review, and quality improvement activities (see Standards DSS and QI for further details)
- Conduct protected peer review and periodic review of physician-level outcomes to identify individuals needing additional interventions/proctoring. As determined by state and local bylaws, peer review committee members may be a subset of the core Vascular Program Committee members

Documentation

- Provide the Pre-Review Questionnaire table with committee membership roster, dates of meetings and attendance for the previous 12 months
- Provide meeting minutes for the most recent committee meeting
- Provide an organizational chart showing the Vascular Program Committee's position within the overall hospital framework
- Provide the Vascular Program Committee charter inclusive of written goals and statement of purpose

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Facilities and Equipment Resources (FER)

FER.1 Hospital Licensure and Accreditation

Definition and Requirements

All Levels

The hospital and its vascular providers meet all local and federal regulatory requirements and maintain a license by the appropriate state licensing authority. The hospital must also maintain accreditation by The Joint Commission (TJC), DNV or an equivalent nationally recognized healthcare facility accrediting body.

Documentation

- Provide recent copies of licensure and hospital accreditation/certification from the various regulatory programs that designate the hospital, including but not limited to The Joint Commission, DNV, and so on
- Provide current improvement plans to address findings from the most recent hospital accreditation review, if any

FER.2 Dedicated Operating Room or Procedure Suite

Definition and Requirements

Comprehensive Inpatient

There must be at least one dedicated hybrid digital subtraction angiography (DSA) operating room as well as a suitable number of other procedure suites (including catheterization labs, interventional radiology (IR) suites, and/or hybrid rooms) with the necessary supplies, resources, and knowledgeable perioperative staff available 24/7/365 for emergency vascular procedures. Fixed-imaging units should predominate, and the ability for cardiopulmonary bypass should exist in at least one hybrid suite.

Operating rooms/procedure suites must be equipped with technology capable of monitoring vital organs and intravascular pressures.

All imaging suites must have DSA postprocessing capabilities, intravascular ultrasound (IVUS), and B-mode ultrasound for guidance during vascular access. In addition, capable and qualified staff must be available to perform and interpret transesophageal echocardiography during aortic repair and reconstruction cases.

It is desirable that the hospital have capable and qualified staff available to perform and interpret electroencephalography or cerebral monitoring during aortic arch operations.

Verified Inpatient

There must be a dedicated operating room or procedure suite (including catheterization lab, IR suite, and/or hybrid room) with the necessary supplies, resources, and knowledgeable perioperative staff available 24/7/365 for emergency vascular procedures.

Operating rooms/procedure suites must be equipped with technology capable of monitoring vital organs and intravascular pressures.

The hospital must have at minimum digital subtraction angiography (C-arm and/or fixed imaging) with postprocessing capabilities, IVUS, and B-mode ultrasound for guidance during vascular access. Hybrid operating rooms and fixed radiologic imaging suites are preferred over portable fluoroscopy units.

Documentation

- Provide the call schedule for operating room staff (for example, nursing staff and radiology technicians) for the previous month
- Provide the hospital's written policies and procedures for operating room/procedure suite availability, use, and staffing/personnel requirements

FER.3 Appropriate Inventory

Definition and Requirements

All Levels

Operating rooms/procedure suites must have an appropriate inventory of specialty devices for performing vascular procedures, including but not limited to grafts, balloons, stents, covered stents, endografts, and thrombectomy devices relevant to the procedures performed.

The hospital must also have appropriate inventory for managing vascular emergencies and urgent patient care needs in the operating room/procedure suite setting.

Documentation

- Provide a summary (inventory list) of all inventory related to vascular surgical and procedural needs, including but not limited to a selection of sheaths, guidewires, angioplasty balloons, occlusion balloons, stents, stent grafts, thrombectomy catheters and/or devices, embolic protection devices, and vascular closure devices as appropriate to the setting
- Provide a summary of appropriate inventory maintained onsite for managing emergency patient care needs

FER.4 Post-Anesthesia Care Unit

Definition and Requirements

All Levels

There must be a post-anesthesia care unit (PACU) available 24/7/365 for observation of patients in the immediate postoperative period. This unit must be staffed by dedicated personnel trained to manage and recognize postoperative complications following vascular surgery and interventions. The intensive care unit (ICU) may be used for post-anesthesia recovery.

Minimum requirements include:

- Pulse oximetry monitoring
- Difficult airway cart
- Advanced Cardiovascular Life Support (ACLS) trained staff
- Fully stocked crash cart (with airway equipment, medications, IVs, and oxygen)

Documentation

- Provide the hospital's written policies and procedures for post-anesthesia care/observation unit availability, use, and staffing/personnel requirements

FER.5 Intensive Care Unit

Definition and Requirements

All Levels

The hospital must have an intensive care unit (ICU) available. An ICU is defined as a specialized treatment unit caring for severely ill and/or injured patients that require constant monitoring and support utilizing specialized equipment, advanced resources, and trained critical care staff available at an increased staff-to-patient ratio.

A capable and qualified critical care team composed of at minimum a qualified physician or surgeon to provide intensive care must be available 24/7/365. Fully trained and qualified staff sufficient to meet the needs of patient care, including critical care nursing, trained respiratory therapists, and an ICU pharmacist, must also be available 24/7/365.

The ICU must also establish a standardized escalation of care plan to include a list of situations in which the ICU physician must be notified.

Primary management of the patient may be either by the surgeon/interventionalist or the ICU physician, depending on local policies. Interface and team-based care between vascular surgeons/interventionalists and intensivists must occur regardless of care structure, and the hospital must have a written protocol that establishes expectations for open communication and a collaborative relationship between the attending physician and intensivists.

Documentation

- Provide hospital policy for ICU staffing (for example, nursing ratios and overnight back-up call schedules)
- Provide ICU physician, resident and/or advanced practice provider call schedule for the previous month
- Provide standardized escalation of care plan
- Provide the hospital's policy detailing the composition, availability, and leadership of the critical care team
- Provide the hospital's written protocol that establishes expectations for open communication and a collaborative relationship between the attending physician and intensivists

FER.6 Vascular Inpatient Treatment Area

Definition and Requirements

All Levels

The hospital must have a designated floor/unit/area for inpatient treatment of vascular patients that is maintained in a consistent area of the hospital. This unit must be staffed at all times when a vascular patient is present in the unit by staff who are specifically trained in the care and management of vascular patients. Staff must demonstrate ongoing competency with vascular care pathways, order sets, and the signs and symptoms of postoperative complications (see Standard PSR.4).

Documentation

- Provide hospital policy for staffing plan/coverage for designated vascular inpatient treatment area

FER.7 Accredited Non-invasive Vascular Lab

Definition and Requirements

All Levels

The hospital must be accredited to perform and interpret specialized non-invasive vascular lab imaging. This includes the ability to perform carotid, renal, abdominal, mesenteric, and extremity arterial and venous duplex ultrasound evaluations.

At minimum, these services must be available within 12 hours of request in inpatient settings. Exemplary hospitals will have all services available 24/7/365.

Documentation

- Provide current certificates for the non-invasive vascular lab from all regulatory bodies

Resources

American College of Radiology Accreditation. Available at https://www.acraccreditation.org. Accessed May 19, 2022.

Intersocietal Accreditation Commission Vascular Testing Accreditation. Available at https://intersocietal.org/programs/vascular-testing/. Accessed December 2, 2022.

FER.8 Imaging Facilities and Capabilities

Definition and Requirements

All Levels

The hospital must have the capability to obtain and interpret computed tomography (CT) scans (including 3D-CT) and echocardiograms 24/7/365, with either an on-site or on-call team available 24/7/365 for emergency diagnostic imaging performance and interpretation.

The hospital must have the technical capabilities to receive, upload, and view imaging obtained at outside facilities. It is strongly recommended to have a mechanism for remote image viewing for physicians.

Documentation

- Provide policies regarding 24/7/365 availability of emergency diagnostic imaging
- Provide the hospital's written policies for capabilities regarding imaging obtained at outside facilities

FER.9 Blood Bank and Laboratory Services

Definition and Requirements

All Levels

Blood bank, rapid transfuser, and intraoperative cell saver must be available 24/7/365 with sufficient blood products to manage urgent cases and the necessary staff available to operate the cell saver machine.

Standard diagnostic laboratory testing services must be available 24/7/365.

Documentation

- Provide the hospital's written policies for the availability of laboratory and blood bank services

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Personnel and Services Resources (PSR)

PSR.1 Qualified Surgeon/Interventionalist

Definition and Requirements

All Levels

There must be thorough processes for credentialing and privileging that ensure all vascular surgeons and interventionalists are qualified and able to provide safe and appropriate care. This includes a formal onboarding process with the involvement of the Vascular Program Medical Director in developing and approving privileging criteria. The institution's credentialing body must adhere to current nationally recognized privileges.

To obtain and maintain active privileges to perform vascular procedures (renewed at least every two years), all physicians performing vascular procedures must fulfill the following requirements:

Initial Vascular Surgery Privileges:

- State medical licensure in good standing
- Completion of appropriate vascular surgery-specific training via one of the three pathways (traditional, integrated, or early specialization) outlined in the **Society for Vascular Surgery Privileging Guidelines**
- Vascular Surgery Certification or board eligibility by the American Board of Surgery or American Osteopathic Board of Surgery (see alternative pathway for foreign-trained and late-career surgeons whose certification lapsed in good standing)
- For board eligible candidates, a letter of completion from the director of a formal vascular surgery fellowship training program
- Privileges to perform open and endovascular procedures
- Surgeon demonstrates they are "actively practicing" vascular procedures for which they are privileged as defined by the local Vascular Program Committee
- Active membership in related professional societies and regional/national quality meeting attendance

Maintenance and Renewal of Vascular Surgery Privileges:

- Privileges must be reviewed by the institution a minimum of every two years
- The surgeon meets requirements for Continuous Certification by the Vascular Surgery Board of the American Board of Surgery or American Osteopathic Board of Surgery (see alternative pathway for foreign-trained and late-career surgeons whose certification lapsed in good standing)
- The surgeon must demonstrate continued critical assessment of their outcomes
- Verification that surgeon maintains compliance with all aforementioned criteria for initial vascular surgery privileges
- The chief of surgery or their designee must verify that these criteria have been met
- Active membership in related professional societies and regional/national quality meeting attendance

Endovascular Intervention Privileges:

- State medical licensure in good standing
- Completion of appropriate vascular intervention-specific training
- Board eligibility or certification in vascular surgery, interventional cardiology, interventional radiology, or vascular medicine
- Letter of completion from the director of a formal vascular interventional fellowship training program or alternative equivalent
- Privileges to perform endovascular interventions
- Demonstrates they are "actively practicing" vascular procedures for which they are privileged as defined by the local Vascular Program Committee
- Active membership in related professional societies and regional/national quality meeting attendance

Maintenance and Renewal of Endovascular Intervention Privileges:

- Privileges must be reviewed by the institution a minimum of every two years
- Meets requirements for board certification
- Demonstrates continued critical assessment of their outcomes
- Verification of maintained compliance with all aforementioned criteria for initial vascular privileges
- Verification that these criteria have been met

Credentialing, privileging, and core onboarding procedures are specific to the specialty to ensure that all vascular surgeons and interventionalists are qualified and able to provide safe and appropriate care. The Vascular Program Committee (see Standard PSG.4) must offer a pathway for surgeons and interventionalists in the following circumstances:

- New physicians (either recent graduates or new to the hospital) requesting privileges
- Established physicians renewing existing privileges
- Established physicians requesting new privileges or new technologies
- Established physicians reestablishing privileges following a break in practice
- Safe introduction of innovative procedures and technologies (for example, robotic operations)

The pathway must outline a process for Focused Professional Practice Evaluation (FPPE) and training requirements that include the following:

- Didactic educational component
- Skills training: inanimate
- Skills training: supervised/proctored
- Incorporation into practice
- Measurement of results

Additionally, the pathway must include a plan for transitioning the surgeon/interventionalist into independent practice that includes monitoring and benchmarking the individual's outcomes.

Comprehensive Inpatient

Comprehensive Inpatient hospitals must have a surgical team that includes at least one board-certified, board-eligible or equivalent vascular surgeon on staff and available 24/7/365. The surgeon is required to be available within 45 minutes, and the hospital must have a formal process for tracking compliance with availability.

Verified Inpatient

Verified Inpatient hospitals must have a surgical team that includes at least one board-certified, board-eligible or equivalent vascular surgeon, cardiothoracic surgeon, or general surgeon on staff privileged to perform all vascular surgical procedures relevant to the portfolio of services offered available 24/7/365. The surgeon is required to be available within 45 minutes, and the hospital must have a formal process for tracking compliance with availability. All privileged surgeons regardless of primary specialty must meet privileging criteria indicated above if performing any vascular procedures.

Documentation

- Provide hospital privileging criteria for surgeons and interventionalists performing vascular procedures
- Provide arrival log or other tracking mechanism for surgeon availability compliance
- Provide written process for safe introduction of new surgical procedures or technology, including the most recent example of a Focused Professional Practice Evaluations (FPPE) process

Resources

The Joint Commission. *Focused Professional Practice Evaluation (FPPE)—Understanding the Requirements.* Available at: www.jointcommission.org/standards/standard-faqs/hospital-and-hospital-clinics/medical-staffms/000001485/. Accessed August 2, 2022.

Calligaro KD et al. Guidelines for facility privileges in vascular surgery and endovascular interventions: Recommendations of the Society for Vascular Surgery. *J Vasc Surg*. 2018;67(5): 1337–1344.

PSR.2 Qualified Operative Team

Definition and Requirements

All Levels

The hospital must have the following personnel available onsite and as part of the vascular operative call team:

- **Dedicated Vascular Nurses:** Qualified vascular nurses must be available onsite at all times when a vascular patient is in the operating room or designated vascular patient treatment area
- **Dedicated Scrub Techs:** Certified scrub techs must be available onsite during all vascular procedures
- **First Assistant:** A qualified first assistant must be available onsite during certain complex vascular procedures (see Standard PSG.1 Program Scope table, all "Comprehensive Inpatient" level procedures)
- **Radiology Tech in Operating Room/Lab:** Qualified radiology techs must be available onsite during all vascular procedures

Documentation

- Provide policies for ensuring an appropriately trained and reproducible team is available for all vascular procedures

PSR.3 Operative Team Availability and Call Coverage

Definition and Requirements

All Levels

The hospital must have a vascular call schedule that provides qualified coverage 24/7/365 by either a vascular surgeon or other qualified surgeon (for example, cardiac, thoracic, or general surgeon with vascular surgical privileges) as well as interventionalists and surgical team members.

Surgical team members must be available within 30 minutes of request or identified need for life-threatening conditions or loss of limb. The hospital must have a formal process for tracking compliance with 30-minute availability. Exemplary hospitals will be able to show appropriate response for a majority of calls.

The vascular inpatient unit staff and emergency department staff must have a written aortic alert protocol for when to call the on-call vascular surgeon and access to vascular call schedule for unassigned patients.

Documentation

- Provide a copy of the vascular call coverage schedule for the previous month
- Provide arrival log or other tracking mechanism for team availability compliance
- Provide aortic alert call-in protocol, if available

PSR.4 Vascular Team Education

Definition and Requirements

All Levels

Nurses, advanced practice providers, and members of the health care team caring for vascular patients in the operating room/procedure suites and dedicated inpatient treatment area must have ongoing vascular-specific training. Team members should be knowledgeable regarding vascular care pathways, order sets, and the signs and symptoms of postoperative complications.

Ongoing training and education may be provided by the hospital or through external continuing education opportunities, including but not limited to those offered as part of the Certified Vascular Nursing program.

Documentation

- Provide documents relating to vascular team education, including specific training on vascular care pathways, vascular order sets, and identification of post-procedure complications in various sites:
  - Operating room/procedure suite
  - Dedicated inpatient treatment area (for example, vascular unit or floor)

Resource

Society for Vascular Nursing. *Certification*. Available at https://svnnet.org/members/certification. Accessed May 19, 2022.

PSR.5 Anesthesiology and Pain Management Services

Definition and Requirements

Comprehensive Inpatient

A dedicated, experienced cardiovascular anesthesiologist must be available 24/7/365 for complex aortic repair cases and to place spinal drains. There must be a capable and qualified board-certified anesthesia provider available 24/7/365 for all other operative cases.

The hospital must also have a dedicated pain management team with the ability to place nerve blocks and epidurals for acute pain management.

Verified Inpatient

There must be a capable and qualified board-certified anesthesia provider available 24/7/365 for operative cases.

The hospital must also have a dedicated pain management team with the ability to place nerve blocks and epidurals for acute pain management.

Documentation

- Provide call schedule for anesthesia demonstrating 24/7/365 coverage for the previous month
- Provide the hospital's written policy documentation regarding conscious sedation credentialing to non-physician anesthesia providers and care team model supervision at the institution, if applicable
- **Comprehensive Inpatient only:** Provide documentation regarding the availability of cardiovascular anesthesiologists on the anesthesia staff

Resource

American Society of Anesthesiologists. (October 17, 2018). *Statement on the anesthesia care team*. Available at: www.asahq.org/standards-and-guidelines/statement-on-the-anesthesiacare-team. Accessed August 2, 2022.

PSR.6 Endoscopic and Interventional Services

Definition and Requirements

All Levels

The hospital must have the ability to perform diagnostic and therapeutic endoscopic and interventional services by a qualified physician 24/7/365.

Documentation

- Provide hospital policies regarding the availability of diagnostic and therapeutic endoscopic and interventional services, including a list of the services available
- If endoscopic and interventional services are not available onsite at all hours, provide an agreement for 24/7/365 call coverage by qualified external providers

PSR.7 Diagnostic Radiology Services

Definition and Requirements

All Levels

The hospital must demonstrate capability to obtain and interpret general diagnostic radiologic imaging modalities 24/7/365, including plain film, portable X-ray, ultrasonography, computed tomography (CT) and magnetic resonance imaging (MRI).

A radiologist credentialed by the hospital must be available within 60 minutes of request 24/7/365 in person or by teleradiology to interpret imaging studies.

Documentation

- Provide a list of diagnostic radiology services available at the hospital, including the hours of availability

PSR.8 Surgical and Medical Specialty Services

Definition and Requirements

Comprehensive Inpatient

The following surgical and medical specialty services must be available as indicated upon request and staffed with qualified personnel (board certified/board eligible when applicable).

Available Onsite
Cardiology
Cardiothoracic Surgery (45-minute response time)
Critical Care
Endocrinology
Gastroenterology
General Surgery (45-minute response time)
Geriatric Medicine
Hematology
Hospitalists/Internal Medicine
Infectious Disease
Interventional Cardiology (24/7/365 cath lab availability)
Nephrology
Neurology
Neurosurgery (45-minute response time)
Orthopedics
Orthotics and Prosthetics
Plastics
Pulmonology
Urology
Wound Care Services

Verified Inpatient

The following surgical and medical specialty services must be available as indicated upon request and staffed with qualified personnel (board certified/board eligible when applicable).

Available Onsite	Available Onsite or via Transfer/Telemedicine Agreement
Cardiology	Cardiothoracic Surgery
Critical Care	Endocrinology
General Surgery (45-minute response time)	Gastroenterology
Hospitalists/Internal Medicine	Geriatric Medicine
Interventional Cardiology (24/7/365 cath lab availability)	Hematology
Pulmonology	Infectious Disease
Wound Care Services	Nephrology
	Neurology
	Neurosurgery
	Orthopedic Surgery
	Orthotics and Prosthetics
	Plastic Surgery
	Urology

Documentation

- Provide transfer agreement documents for those specialties that are unavailable at the hospital, if any

PSR.9 Allied Health Services

Definition and Requirements

All Levels

The hospital must provide a full complement of allied health services employing trained professionals working in coordination with the medical and surgical team to provide comprehensive pre- and post-procedure support.

The following specialty services must be available onsite and staffed with qualified personnel:

- Physical Therapy
- Occupational Therapy
- Respiratory Therapy
- Pharmacy
- Nutrition

All services must be available seven days a week.

Documentation

- Provide call schedules for all specialty services listed within the standard above for the previous month including hours of coverage and consultation availability

PSR.10 Patient Support Services

Definition and Requirements

All Levels

The following patient support services must be made available as needed to all vascular patients:

- Behavioral Health Services
- Case Management
- Ethical Consultation
- Palliative Care Services
- Pastoral Care Services
- Patient Navigation
- Social Services
- Translation Services

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ACS Vascular-VP

Vascular Verification Program
American College of Surgeons

A Quality Program with

SVS Society for Vascular Surgery

AMERICAN COLLEGE OF SURGEONS
VASCULAR VERIFICATION PROGRAM

Patient Care: Expectations and Specific Protocols (PC)

PC.1 Standardized Clinical Pathways and Procedure Selection

Definition and Requirements

All Levels

The hospital must have standardized order sets and clinical pathways for vascular patients that are evidence-based and align with nationally recognized guidelines and practice statements, such as those issued by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, and Society for Interventional Radiology.

Standardized, team-based processes must be in place to ensure quality, safety, and reliability in all five phases of care of the primary morbid condition requiring surgery/intervention. The five phases of care are defined as:

1. Preoperative phase
2. Immediate preoperative phase
3. Intraoperative phase
4. Postoperative phase
5. Post-discharge phase

Standardized processes may include but are not limited to:

- Standardized preoperative evaluation and risk assessment process
- Preoperative optimization/surgery-readiness protocols for high-risk patients, such as the American College of Surgeons' Strong for Surgery or centralized perioperative care clinic to assess multimodal patient needs, including nutrition, medication use, smoking cessation, and pain control
- Geriatric-specific protocols
- Intraoperative procedures such as timeouts, handoffs, and debriefs
- Multimodal pathways for Enhanced Recovery After Surgery (ERAS) that include optimization of nutrition; standardized, opioid-sparing analgesic and anesthetic regimens; and early mobilization
- Discharge and post-discharge protocols to ensure safe pain and wound management, appropriate follow-up, and continuity of care

Additionally, the hospital must have documented, standardized procedure selection protocols that are evidence based and align with nationally recognized guidelines, such as those issued by the Society for Vascular Surgery, American College of Cardiology, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, Society for Interventional Radiology, and American College of Surgeons.

Exemplary hospitals will have standardized processes for patients across all five phases of care and regularly measure compliance with protocols. Additionally, there will be mechanisms in place to ensure appropriate education, review, maintenance, and identification of new opportunities for protocol development and standardization. Such hospitals will be able to demonstrate compliance with order sets and clinical pathways in the majority of cases and will have reliable methodology for tracking compliance and noting areas of deviation.

Documentation

- Provide all available and in-use order sets and clinical pathways for vascular patients with source documentation
- Provide documentation demonstrating compliance rates for order sets and pathways, if any are in use
- Provide any procedure selection protocols currently in use for vascular patients with source documentation

Resources

American College of Surgeons. *AHRQ Improving Surgical Care and Recovery*. Available at: https://www.facs.org/quality-programs/iscr. Accessed June 28, 2021.

American College of Surgeons. *Strong for Surgery*. Available at: https://www.facs.org/qualityprograms/strong-for-surgery. Accessed June 28, 2021.

Hoyt DB, Ko CY. Chapter 2: Team-based care: The surgeon as leader in each phase of surgical care. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 25–36.

McGinigle KL, Spangler EL, Pichel AC, et al. (2022). Perioperative care in open aortic vascular surgery: A consensus statement by the Enhanced Recovery After Surgery (ERAS) Society and Society for Vascular Surgery. *J Vasc Surg*. 16:S0741–5214(22)00249-X. doi: 10.1016/j.jvs.2022.01.131. Online ahead of print. PMID: 35181517

PC.2 Patient Education

Definition and Requirements

All Levels

The hospital has documented plans and materials for pre- and post-operative patient education, including but not limited to the areas indicated below.

Preoperative Education

- Indications and contraindications for surgery/procedure
- Various surgical and nonsurgical interventional options provided at the hospital or at other facilities
- Hospital/surgeon/interventionalist's procedure volume and outcomes for indicated procedure(s)
- Clear explanation of goals, risks, benefits, and alternatives for indicated procedure(s) as part of informed consent process
- Operative approach and anesthesia options, if applicable
- Immediate preoperative skin preparation and medication management

Postoperative Education

- Explanation of the expected course of postoperative care, including instructions regarding wound management, diet, medications, pain management, lifestyle, and physical activity modifications
- Signs and symptoms of complications such as tachycardia, fever, shortness of breath, excessive pain, and vomiting, including when and whom to call
- Ongoing involvement in treatment planning and access to care coordination

Documentation

- Provide all educational materials currently in use with vascular patients, including both pre- and post-operative materials

PC.3 Informed Consent Process

Definition and Requirements

All Levels

The informed consent process must include a clear explanation of goals, risks, benefits, and alternatives for indicated procedures(s) and must be clearly documented in the medical record for all vascular patients. The hospital must demonstrate a process for patients that includes discussion and documentation of the following, when appropriate:

- Goals of Care
- Power of Attorney
- Advance Directives
- Patient Consent

For non-urgent/emergent procedures, the informed consent document should be signed by the patient or surrogate prior to arrival in the pre-procedural area.

Documentation

- Provide each of the following forms:
  - Goals of Care
  - Power of Attorney
  - Advance Directives
  - Patient Consent

PC.4 Risk Assessment and Preoperative Optimization Protocols

Definition and Requirements

All Levels

The hospital must have a risk-assessment, risk modification factor, and/or prehabilitation protocol that addresses the process for preoperative evaluation and management of known risk factors and comorbidities. This process should be integrated into standardized care pathways for vascular patients. Preoperative optimization strategies must be developed using nationally recognized guidelines and evidence when available.

Protocols should include at minimum the following:

- **Risk Assessment:** The hospital should have a process for risk assessment.
- **Nutritional Assessment:** The hospital should have a process for management of patients with poor preoperative nutrition (such as albumin < 3 g/dL, unintentional weight loss of more than 8 pounds, or other nutritional concerns).
- **Medication Risk Assessment:** The hospital should have a standard process for management of anticoagulation medications.
- **Specific Populations:** Processes to address specific high-risk surgical populations must be included in the preoperative evaluation. High-risk factors include:
  - *Older adults (75 years and older):* The hospital should have a standard process for management of patients with poor functional status, disability (one or more activity of daily living (ADL) impairments), and high level of frailty.
  - *Hyperglycemia:* The hospital should have a standard process for management of patients with poorly controlled diabetes (HgbA1c >10).
  - *Alcohol and drug abuse:* The hospital should have a standard process for management of patients with alcohol and/or drug abuse history.
  - *Tobacco abuse:* Access to smoking and tobacco cessation services should be provided to patients who screen positive for tobacco use.

Documentation

- Provide documentation for how each of the following are conducted, including criteria for selecting patients for additional assessment or optimization programs:
  - Risk assessment/management
  - Nutritional assessment/management
  - Medication risk assessment/management
  - High-risk population assessment/management

Resource

American College of Surgeons. *Strong for Surgery*. Available at: https://www.facs.org/qualityprograms/strong-for-surgery. Accessed June 28, 2021.

PC.5 Thoracic Aortic Protocol

Definition and Requirements

Comprehensive Inpatient

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of thoracic aortic disease, such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, and Society for Interventional Radiology.

The hospital must have a written protocol for complex thoracic aortic management, including:

- **Evaluation and Management of Acute Thoracic Aortic Emergencies:** The hospital must have a protocol for the initial evaluation, transport, and treatment of acute thoracic aortic emergencies via endovascular, open, or hybrid means.
- **Neuromonitoring**: The hospital must have intraoperative neuromonitoring capabilities and necessary staff to interpret neuromonitoring available to assess the integrity of the spinal cord, including a spinal drain protocol, during aortic repair, or reconstruction.
- **Cardiopulmonary Bypass:** The hospital must have the appropriate equipment and staff to place patients on cardiopulmonary bypass intraoperatively during aortic repair or reconstruction.
- **Cardiothoracic Surgeon Availability:** A capable and qualified board-certified, board-eligible or equivalent cardiothoracic surgeon must be available 24/7/365 for operative and perioperative assistance as needed.
- **Vascular Surgeon Availability:** A capable and qualified board-certified, board-eligible or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) for operative and perioperative assistance as needed.

The hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for thoracic aortic disease management including acute emergencies
- Provide documentation of protocol-compliance tracking

Resource

Upchurch GR Jr, Escobar GA, Azizzadeh A, et al. (2021). Society for Vascular Surgery clinical practice guidelines of thoracic endovascular aortic repair for descending thoracic aortic aneurysms. J *Vasc Surg*, 73(1 Supp):55S–83S.

PC.6 Abdominal Aortic Protocol

Definition and Requirements

All Levels

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of abdominal aortic disease, such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, Society for Interventional Radiology, and Society for Vascular Medicine.

The hospital must have a written protocol for complex abdominal aortic disease management, including:

- **Evaluation and Management of Acute Abdominal Aortic Emergencies:** The hospital must have a protocol for the initial evaluation, transport, and treatment of acute abdominal aortic emergencies via endovascular, open, or hybrid means.
- **Neuromonitoring:** The hospital must have intraoperative neuromonitoring capabilities and necessary staff to interpret neuromonitoring available to assess the integrity of the spinal cord, including a spinal drain protocol, during aortic repair or reconstruction.
- **Vascular Surgeon Availability**

  Comprehensive Inpatient

  A capable and qualified board-certified, board-eligible or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) for operative and perioperative assistance as needed.

  Verified Inpatient

  A capable and qualified board-certified, board-eligible or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) either onsite or via transfer agreement for operative and perioperative assistance as needed.

For all levels, the hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for abdominal aortic disease management including acute emergencies
- Provide documentation of protocol-compliance tracking

Resources

Chaikof EL, Dalman RL, Eskandari MK, et al. (2018). The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm. *J Vasc Surg*, 67(1):2-77.e2.

Guirguis-Blake JM, Beil TL, Senger CA, and Coppola EL (2019). Primary care screening for abdominal aortic aneurysm: Updated evidence report and systematic review for the U.S. Preventive Services Task Force. *JAMA*, 322(22):2219–2238.

Owens DK, Davidson KW, Krist AH, et al. (2019). Screening for abdominal aortic aneurysm: U.S. Preventive Services Task Force recommendation statement. *JAMA*, 322(22):2211–2218.

PC.7 Carotid Artery Disease Protocol

Definition and Requirements

All Levels

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of carotid artery disease, such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Interventional Radiology, Society for Cardiovascular Angiography and Interventions, and Society for Vascular Medicine.

The hospital must have a written protocol for complex extracranial cerebrovascular disease management, including:

- **Evaluation and Management of Acute Carotid Emergencies:** The hospital must have a protocol for the initial evaluation, transport, and treatment of acute extracranial cerebrovascular emergencies via endovascular, open, or hybrid means.
- **Vascular Surgeon Availability**

  Comprehensive Inpatient

  A capable and qualified board-certified, board-eligible or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) for operative and perioperative assistance as needed.

  Verified Inpatient

  A capable and qualified board-certified, board-eligible or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) either onsite or via transfer agreement for operative and perioperative assistance as needed.

For all levels, the hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for carotid artery disease management
- Provide documentation of protocol-compliance tracking

Resource

AbuRahma AF, Avgerinos ED, Chang RW, et al. (2022). Society for Vascular Surgery clinical practice guidelines for management of extracranial cerebrovascular disease. *J Vasc Surg*, 75(1S):4S–22S.

PC.8 Peripheral Artery Disease Protocol

Definition and Requirements

All Levels

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of peripheral artery disease, such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, and Society for Interventional Radiology.

The hospital must have a written protocol for complex peripheral artery disease management, including:

- **Evaluation and Management of Acute Peripheral Arterial Emergencies:** The hospital must have a protocol for the initial evaluation, transport, and treatment of acute peripheral arterial emergencies via endovascular, open, or hybrid means.
- **Vascular Surgeon Availability**

  Comprehensive Inpatient

  A capable and qualified board-certified, board-eligible, or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) for operative and perioperative assistance as needed.

  Verified Inpatient

  A capable and qualified board-certified, board-eligible, or equivalent vascular surgeon must be available 24/7/365 (with a 45-minute response time) either onsite or via transfer agreement for operative and perioperative assistance as needed.

For all levels, there must be a perioperative evaluation protocol for claudication that includes medication evaluation, smoking cessation, and exercise therapy or documentation of patient refusal.

The hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for peripheral artery disease management
- Provide documentation of protocol-compliance tracking

Resources

Gerhard-Herman MD, Gornik HL, Barrett C, et al. (2017). 2016 AHA/ACC Guideline on the management of patients with lower extremity peripheral artery disease: A report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol*, 69(11):e71-e126.

Conte MS, Pomposelli FB, Clair DG, et al. (2015). Society for Vascular Surgery practice guidelines for atherosclerotic occlusive disease of the lower extremities: Management of asymptomatic disease and claudication. *J Vasc Surg*, 61(3 Suppl):2S–41S.

Brott TG, Halperin JL, Abbara S, et al. (2011). Guideline on the management of patients with extracranial carotid and vertebral artery disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American Stroke Association, American Association of Neuroscience Nurses, American Association of Neurological Surgeons, American College of Radiology, American Society of Neuroradiology, Congress of Neurological Surgeons, Society of Atherosclerosis Imaging and Prevention, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of NeuroInterventional Surgery, Society for Vascular Medicine, and Society for Vascular Surgery. *J Am Coll Cardio*l, 7(8):e16–94.

PC.9 Arteriovenous Hemodialysis Access Protocol

Definition and Requirements

All Levels

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of arteriovenous hemodialysis access such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, and Society for Interventional Radiology.

The hospital must have a written protocol for arteriovenous hemodialysis access, including:

- Preoperative evaluation
- Treatment of complication
- Patient selection
- Medical management
- Closed loop communication postintervention with dialysis center
- Outpatient dialysis evaluation for metabolic stability

The hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for arteriovenous hemodialysis access
- Provide documentation of protocol-compliance tracking

Resources

Sidawy AN, Spergel LM, Besarab A, et al. (2008). The Society for Vascular Surgery: Clinical practice guidelines for the surgical placement and maintenance of arteriovenous hemodialysis access. *J Vasc Surg*, 48(5 Supp): S2–S25.

Lok CE, Huber TS, Lee T, et al. (2020). KDOQI Clinical Practice Guidelines for Vascular Access: 2019 update. *Am J Kidney Dis*, 75(4 Supp2): S1-S164.

PC.10 Superficial and Deep Venous Disease Protocol

Definition and Requirements

All Levels

The hospital demonstrates adoption of national clinical practice and appropriate use guidelines for the evaluation and management of superficial and deep venous disease, such as those published by the Society for Vascular Surgery, American College of Surgeons, American Heart Association, American College of Cardiology, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine, and Society for Interventional Radiology.

The hospital must have a written protocol for superficial and deep venous disease management, including:

- Preoperative evaluation protocol for conservative treatment
- Post-procedure thrombotic event diagnosis and treatment

The hospital must demonstrate processes for reviewing compliance with these guidelines for patients that meet protocol criteria. Exemplary hospitals will be able to demonstrate compliance with the protocol in a majority of cases and will have processes in place to review and update protocols at regular intervals.

Documentation

- Provide written protocol for superficial and deep venous disease management
- Provide documentation of protocol-compliance tracking

Resources

Gloviczki P, Comerota AJ, Dalsing MC, et al. (2011). The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the Society for Vascular Surgery and American Venous Forum. *J Vasc Surg*, 53(5 Suppl):2S-48S.

O'Donnell TF Jr, Passman MA, Marston WA, et al. Society for Vascular Surgery; American Venous Forum (2014). Management of venous leg ulcers: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. *J Vasc Surg*, 60(2 Suppl):3S–59S.

Lurie F, Lal BK, Antignani PL, et al. (2019). Compression therapy after invasive treatment of superficial veins of the lower extremities: Clinical practice guidelines of the American Venous Forum, Society for Vascular Surgery, American College of Phlebology, Society for Vascular Medicine, and International Union of Phlebology. *J Vasc Surg Venous Lymphat Disord*, 7(1):17–28.

Lurie F, Passman M, Meisner M, et al. (2020). The 2020 update of the CEAP classification system and reporting standards. J Vasc Surg Venous Lymphat Disord, 8(3):342–352. Erratum in: *J Vasc Surg Venous Lymphat Disord.* 2021;9(1):288.

Kabnick LS, Sadek M, Bjarnason H, et al. (2021). Classification and treatment of endothermal heat-induced thrombosis: Recommendations from the American Venous Forum and the Society for Vascular Surgery. *J Vasc Surg Venous Lymphat Disord*, 9(1):6–22.

Masuda E, Ozsvath K, Vossler J, et al. (2020). The 2020 appropriate use criteria for chronic lower extremity venous disease of the American Venous Forum, the Society for Vascular Surgery, the American Vein and Lymphatic Society, and the Society of Interventional Radiology. *J Vasc Surg Venous Lymphat Disord*, 8(4):505–525.e4.

American College of Phlebology (2015). *Practice Guidelines: Management of Obstruction of the Femoroiliocaval Venous System*. Available at: http://www.phlebology.org/wp-content/uploads/2015/10/Management-of-Obstruction-of-the-Femoroiliocaval-Venous-System-Guidelines.pdf. Accessed May 22, 2022.

American College of Phlebology (2015). *Practice Guidelines: Duplex Ultrasound Imaging of Lower Extremity Veins in Chronic Venous Disease*. Available at: https://www.myavls.org/assets/pdf/ACP_Imaging_Guidelines_rev1109_a.pdf. Accessed May 22, 2022.

PC.11 Geriatric Patient Care Protocols

Definition and Requirements

All Levels

The hospital must have protocols specific to the care of older adults that address the unique needs of this population across the five phases of care. These protocols should be integrated into standardized care pathways for vascular patients.

Protocols specific to the care of older adults include but are not limited to the following:

- Identification of vulnerable geriatric or frail patients
- Identification of patients who will benefit from the input of a health care provider with geriatric expertise
- Assessment of frailty
- Prevention, identification, and management of dementia, depression, and delirium
- Process to capture and document what matters to patients, including preferences and goals of care, code status, advanced directives, and identification of a proxy decision maker
- Medication reconciliation and avoidance of inappropriate medications
- Screening for mobility limitations and assurance of early, frequent, and safe mobility
- Implementation of safe transitions to home or other health care facility

Documentation

- Provide any protocols specific to the care of older adults currently in use with vascular patients

Resource

American College of Surgeons. *ACS Geriatric Surgery Verification Program*. Available at: https://www.facs.org/quality-programs/geriatric-surgery. Accessed April 1, 2022.

PC.12 Rapid Response Protocol

Definition and Requirements

All Levels

There must be a written protocol that governs the activation of the rapid response team. Capable and qualified rapid response personnel must be available 24/7/365. The team must have access to resources and supplies necessary during codes that must be compiled in a designated cart and location for use during any medical emergencies (such as cardiac and pulmonary emergencies).

Documentation

- Provide written rapid response protocol

PC.13 Rescue Protocol

Definition and Requirements

All Levels

The hospital must have rescue protocols in place for cardiac emergencies (such as myocardial infarction), pulmonary emergencies (such as pulmonary embolism), bleeding emergencies (such as life-threatening hemorrhage), and neurologic emergencies.

Documentation

- Provide all written rescue protocols

PC.14 Massive Transfusion Protocol

Definition and Requirements

All Levels

The blood bank must have a documented protocol for management of life-threatening hemorrhage, including capabilities for rapid transfusion.

Documentation

- Provide the hospital's written massive transfusion protocol, including available products, required response times, and rapid transfusion protocols

PC.15 Discharge Planning and Disposition Pathways

Definition and Requirements

All Levels

The hospital must have written discharge and disposition protocols/pathways for patient follow-up that include access to all applicable services either onsite or via referral. Pathways may include but are not limited to:

- Surgical/interventional team follow-up
- Primary care physician/specialist follow-up and communication
- Follow-up imaging and studies
- Wound care follow-up

Hospitals must also demonstrate disposition pathways that include preoperative planning for patients requiring complex post-discharge care, including skilled nursing facilities, long-term acute care, and both inpatient and outpatient rehabilitation.

Documentation

- Provide any standardized discharge and disposition pathways applicable to vascular patients
- Provide any existing transfer agreements with post-hospitalization disposition facilities

PC.16 Ability to Readmit and Receive Transfer Patients 24/7

Definition and Requirements

All Levels

The hospital must be capable of receiving patients via readmission and transfer 24/7/365, regardless of condition.

The emergency department must have the necessary resources and staff available to care for vascular patients who arrive in an unstable condition, including a documented care pathway to expedite their evaluation and treatment.

Documentation

- Provide written protocol for expediting evaluation and treatment of vascular patients arriving in unstable condition
- Provide any documentation on processes for patient readmission

PC.17 Transfer Agreements and Protocols

Definition and Requirements

All Levels

Hospitals that provide services through transfer agreements must have written protocols for when, how, and where patients must be transferred if a patient requires a higher level of care or outside service. Written transfer agreements must be in place to support transfer protocols.

Documentation

- Provide all transfer agreements and transfer protocols in place for referral services or instances when patients require a higher level of care, if applicable

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Data Systems and Surveillance (DSS)

DSS.1 Data Collection and Registry Participation

Definition and Requirements

All Levels

Data must be available for use specific to vascular quality and safety that span the scope of the vascular practice at the hospital. Data must be accompanied by sufficient resources for collection, analysis, and generation of reports.

At baseline, the Vascular Program must have a defined process for data capture and review and a list of measures that are monitored continuously. Measures may be maintained across a single or multiple platforms up to and including data registries, administrative data reports, and/or local data tracking. Data must be available for review by the Vascular Program Committee at minimum quarterly. Data must also be abstracted by an individual with appropriate clinical knowledge and expertise to ensure the accuracy of the data.

Where available, the hospital submits vascular cases to a national, population-based, clinical data registry that offers risk-adjusted benchmarking reports on vascular-specific outcomes measures (such as SVS Vascular Quality Initiative [VQI], ACS NSQIP, and STS Database). Exemplary hospitals will have registry data available for all procedures within the hospital's scope. For hospitals where 100% case capture is not available, specified sampling criteria regarding capture of vascular cases must be followed.

At a minimum, all patients should be followed through the 30-day postoperative period. Exemplary hospitals will be able to demonstrate follow-up at both 6 months and 12 months postoperatively. The hospital must provide a written protocol for monitoring data entry and patient follow-up, including a schedule for contact/outreach and a lost-to-follow-up protocol.

Data must be used to monitor and identify potential quality and safety issues and support quality improvement initiatives within the Vascular Program. The Vascular Program must have access to reports on standard core outcome measures to facilitate identification and investigation of outlying results. Exemplary hospitals will have risk-adjusted, benchmarked data reports available for review at least twice annually. Available data sources should also provide capability for the hospital to analyze its own data and generate its own unique reports to evaluate its level of care and outcomes. Exemplary hospitals will have formalized processes to widely communicate results of data reports throughout the Vascular Program as well as to hospital leadership.

In addition to capturing required safety measures, adverse events, and clinical outcomes, exemplary hospitals will have methods and protocols for capture and review of vascular-specific process measures, appropriateness measures, and/or patient-reported outcomes (PROs). Where available, these measures could be available for review by the Vascular Program Committee at set intervals and used to develop quality improvement initiatives.

While it is recognized that not all hospitals will participate in a formal registry at the time of initial verification, it is expected that exemplary hospitals will be using clinical, non-administrative data by the time of their next verification site visit (3 years).

Documentation

- Provide the most recent (patient de-identified) data reports from each registry or data source monitored for quality improvement purposes, including patient experience data, hospital-wide event reporting, surgical outcomes data, and all vascular-specific data
- Provide the Pre-Review Questionnaire Data Collection Table for all procedures not captured in submitted data reports
- Provide the hospital's policy/training on reporting quality and safety events
- Provide the hospital's written protocol for 30-day and long-term (six month and/or annual) patient follow-up
- Provide the hospital's protocols and methods for developing, tracking, and evaluating process, appropriateness, and patient-reported outcomes measures, if any

Resources

Cima RR, Hall BL, Michelassi F, and Sultan ST. Chapter 11: Data analytics: An overview of systems used to improve health care quality and safety. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 211-236.

Society for Vascular Surgery. *Society for Vascular Surgery (SVS) Vascular Quality Initiative.* Available at: https://www.vqi.org. Accessed May 22, 2022.

American College of Surgeons. *National Surgical Quality Improvement Program*. Available at: https://www.facs.org/quality-programs/acs-nsqip. Accessed May 22, 2022.

The Society of Thoracic Surgeons. *STS National Database*. Available at: https://www.sts.org/registries/sts-national-database. Accessed May 26, 2022.

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Quality Improvement (QI)

QI.1 Quality Assessment and Improvement

Definition and Requirements

All Levels

There are dedicated and sufficient resources to support formal quality and process improvement based on high-quality, reliable data specific to the Vascular Program.

The hospital must demonstrate how it uses various data sources to monitor for, identify, and conduct formal quality improvement (QI) activities specific to the Vascular Program. The hospital must show evidence of established processes for using objective, risk-adjusted, and externally benchmarked data to drive QI efforts led by the Vascular Program Medical Director. Formal quality improvement initiatives must include and document the following:

- Identification of a problem using case review, registry information, or other high-quality data sources
- Propose an intervention using standardized QI methodology and tools (such as LEAN Six Sigma; Define, Measure, Analyze, Improve and Control [DMAIC]; and/or Root Cause Analysis [RCA])
- Implement an intervention using objective data to monitor progress
- Share findings and results of the QI initiative with stakeholders
- Continue active surveillance to sustain improvement

The Vascular Program is expected to continuously engage in QI initiatives. The program should be able to demonstrate at least one QI initiative annually based on a need or issue identified in vascular care.

Documentation

- Provide the Vascular QI Projects Pre-Review Questionnaire table listing all examples of Vascular QI initiatives from the previous three years

Resources

American College of Surgeons. ACS Quality Framework. Available at: https://www.facs.org/quality-programs/quality-framework/. Accessed July 24, 2023.

American College of Surgeons. ACS Quality Improvement Course: The Basics. Available at: https://www.facs.org/quality-programs/quality-improvement-education/qi-basics-course/. Accessed July 24, 2023.

QI.2 Case Review Process

Definition and Requirements

All Levels

There is a standardized, documented process for formal retrospective case review within the Vascular Program to monitor adverse events, assess compliance with protocols, and identify opportunities for improvement and standardization.

The Vascular Program Committee has established and standardized processes for formal case review that are distinct from a typical morbidity and mortality (M&M) conference and include but are not limited to the following:

1. Establishment of a set of defined, explicit criteria to identify possible cases for review (for example, individual reporting, near misses, reporting system, and registry)
2. Selection of cases for review based on standardized criteria and through periodic random selection
3. Use of a standardized process for case reviews/ evaluation and documentation of review and resolution
4. Integration of findings and resolutions with clinical care and quality improvement activities
5. Maintenance of surveillance of identified issues
6. Use of defined criteria to ensure all cases (patient and procedure) are appropriate for the setting in which they are being conducted

The case review process should ensure that the hospital has standardized processes for identifying problems (such as surveillance mechanisms), reviewing problems and identifying underlying system-level causes (such as quality conferences), and preventing similar problems in the future (such as feedback and education).

Documentation

- Provide diagram/process flow map(s) for any case review processes
- Provide documentation of meeting occurrences and vascular surgeon and interventionalist attendance
- Provide case review template (use of template is suggested, but not required)
- Provide patient chart and case review documentation for a sampling of charts that were identified by the hospital for review (Chart Review during site visit)

Resource

Hyman NH, Lillemoe KD, and Shackford SR. Chapter 4: Case review and peer review: Forums for quality improvement. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 51-60.

QI.3 Peer Review Process for the Individual Physician

Definition and Requirements

All Levels

The Vascular Program Committee in conjunction with the hospital's peer review oversight committee has established and standardized processes to monitor and address quality and safety issues with the individual physician through a formal peer review process that respects the patient, institution, and individual physician. The peer review committee may be organized according to locally defined rules and structures, but must be composed of sufficient membership to ensure clinical knowledge and diversity of specialization relevant to the area of review.

This process aims to ensure that the hospital has standardized capabilities for identifying and remediating individual physicians who may be experiencing challenges or need support at any point in their tenure.

Exemplary hospitals will have evidence of a robust review process using data to evaluate individual performance by benchmarking to accepted standards and peer performance. Review should occur on a regular and specified schedule to ensure favorable patient outcomes and compliance with standard protocols and pathways. When an issue with individual performance is identified, there are timely procedures in place to ensure both patient safety and respectful remediation through mentorship, proctoring, and/or additional education. There are also policies and procedures in place to address the following:

- Physician impairment and safe transitions out of practice
- Management of disruptive physician behavior
- Physician/provider wellness programs
- Second victim support for physicians and other providers who have experienced a sentinel event or other significant events

Documentation

- Provide all policies and procedures pertaining to the peer review process
- Provide any policies and processes for addressing issues such as disruptive behavior, physician impairment, and physician wellness programs

Resource

Hyman NH, Lillemoe KD, Shackford SR. Chapter 4: Case review and peer review: Forums for quality improvement. In: Hoyt DB, Ko CY, eds. *Optimal Resources for Surgical Quality and Safety*. American College of Surgeons; 2017: 51-60.

QI.4 Quality Improvement Collaborative Participation

Definition and Requirements

All Levels

Involvement in a vascular-specific state-wide, regional and/or national collaborative is highly recommended. The activities of the collaborative must allow for sharing of hospital-level data with intention to identify quality improvement areas and improve access to care for vascular patients. Participation should include at a minimum annual attendance in a collaborative meeting.

Documentation

- Provide a listing of any state-wide, regional, and/or national collaboratives in which the Vascular Program participates
- Provide collaborative data reports from the previous 12 months used within the Vascular Program, if any

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Education: Professional and Community Outreach (EDU)

EDU.1 Patient Outreach and Community Education

Definition and Requirements

Comprehensive Inpatient

The Vascular Program must offer one or more education, prevention, and/or early detection programs annually. These programs may take place on- or off-site and may be coordinated with other facilities and/or local agencies.

Documentation

- Provide documentation of educational activities conducted within the previous 12 months, including location of activity and primary audience

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Research: Basic and Clinical Trials (RES)

RES.1 Research and Scholarly Activities

Definition and Requirements

All Levels

Patient access to research and clinical trials: Information about the availability of applicable clinical trials is provided to patients through a formal mechanism, such as:

- Pamphlets or brochures in patient packets
- Physician/nurse-led patient education

Comprehensive Inpatient

Responsibility of the hospital to participate in research: Hospitals that provide comprehensive vascular treatment to a high volume of patients at all levels of acuity are required to innovate and advance vascular care through research and other scholarly work. Such activities also serve to develop new leaders in the field of vascular patient care. Scholarly activities must take the form of at least one of the following:

- Publication of at least one peer-reviewed article in the previous 12 months
- Participation as a visiting professor or invited speaker at a regional, national or international vascular conference in the previous 12 months

Documentation

- Provide evidence of current IRB protocols, if any
- Provide a listing of clinical trials and the number of patients accrued in the previous 12 months, if any
- Provide a list of peer-reviewed publications for the previous three years, if any

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