The Arab League
Council of Arab Health Ministers
The Arab Board of Health Specializations
General Secretariat

جامعة الدول العربية
مجلس وزراء الصحة العرب
المجلس العربي للاختصاصات الصحية
الأمانة العامة

المجلس العلمي للجراحة

Scientific Council of General Surgery

دليل اختصاص جراحة الأوعية الدموية

Guidebook of Vascular Surgery

54	الإطلاق	2022
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Introduction

Modern vascular surgeons must possess a defined body of knowledge, open operative and endovascular procedural skills that are used to collect and interpret data, make appropriate clinical decisions, and carry out diagnostic and therapeutic procedures within the boundaries of their discipline and expertise. The role of medical expert/clinical decision-maker is central to the function of vascular surgeons and draws on the competencies included in the other major roles of scholar, communicator, health advocate, manager, collaborator, and professional.

Goals and Objectives

The primary goal of the Arab Board of Vascular Surgery Residency Program is to produce competent vascular surgeons able to provide comprehensive, compassionate care for patients with vascular diseases using open and endovascular techniques and equipped to advance in academic and leadership positions.

Rotation Specific Objectives for Arab Board of Vascular Surgery

At the completion of training, the resident will have acquired the following competencies and will function effectively as:

- Medical Expert and Clinical Decision-Maker.
- Demonstrate an understanding of and the capacity to solve problems.
- Apply knowledge and expertise to performance of technical skills relevant to vascular surgery.
- Communicator.
- Collaborator.
- Manager.
- Health Advocate.
- Scholar.
- Professional.

Medical Expert / Clinical Decision-Maker

Modern vascular surgeons must possess a defined body of knowledge, open operative and endovascular procedural skills that are used to collect and interpret data, make appropriate clinical decisions, and carry out diagnostic and therapeutic procedures within the boundaries of their discipline and expertise. The role of medical expert/clinical decision-maker is central to the function of vascular surgeons and draws on the competencies included in the other major roles of scholar, communicator, health advocate, manager, collaborator, and professional.

General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Requirements

- Demonstrate cognitive understanding of patient care, vascular disease, as well as the diagnostic and therapeutic skills to effectively and ethically manage these problems.
- Elicit a history that is relevant, concise, accurate and appropriate to the patient's problem(s).
- Perform physical examination that is relevant, sufficiently thorough, and appropriate and meets specialty specific standards and, if necessary, exceeds these standards.
- Select medically appropriate investigative tools in a cost-effective, ethical and useful manner.

Demonstrate an understanding of and the capacity to solve problems in relation to the following knowledge:

- The anatomy, physiology, and pathophysiology of the circulatory system in health and disease, including arterial wall and cell biology, hemodynamics, and ischemia-related organ dysfunction.
- Biostatistics and epidemiology as they relate to vascular surgery.
- The differing patterns of disease, natural history, and responses to treatment of vascular disease in men and women and in different racial and cultural groups.
- Aneurysms of the aorta and other vessels. [SEP]
- Chronic lower extremity arterial occlusive disease[SEP]
- Acute and chronic visceral ischemia including renal artery occlusive disease. [SEP]
- Extracranial cerebrovascular disease. [SEP]
- Intrathoracic non-coronary vascular disease. [SEP]
- Chronic upper extremity occlusive disease. [SEP]
- Thoracic outlet syndrome. [SEP]
- Acute arterial occlusion. [SEP]
- Local and systemic complications of vascular therapy. [SEP]
- Vascular trauma. [SEP]
- Aortic dissections. [SEP]
- Venous thromboembolic disease. [SEP]
- Chronic venous diseases. [SEP]
- Lymphedema. [SEP]
- Amputations. [SEP]
- Endovascular therapy. [SEP]
- Risk stratification and risk factor modification in vascular disease.
- Coagulation disorders. [SEP]

- Vasospastic disorders.
- Non-atherosclerotic vascular disease.
- Arterial venous malformations.
- Vascular access for hemodialysis and chemotherapy.
- Noninvasive and invasive diagnosis and radiation safety
- Biological and synthetic grafts and complications.

Apply knowledge and expertise to performance of technical skills relevant to vascular surgery including:

- The ability to perform the common and complex surgical procedures in vascular surgery safely and competently with the ability and confidence to deal with unexpected findings at operation.
- Knowledge in the application of, and interpretative skills in, venography, angiography and invasive imaging modalities.
- Knowledge and skills in the application of endovascular interventions, and other treatment modalities.
- The capacity to access and apply relevant information as well as new and current therapeutic options to clinical practice.
- Medical expertise in situations other than in direct patient care. (e.g., presentations, medico-legal cases, etc.).
- Effective consultation skills in presenting well-documented assessments and recommendations in written and/or verbal form in response to a request from another health care provider.

Communicator

To provide humane, high-quality care, vascular surgeons must establish effective relationships with patients, other physicians, and other health professionals. Communication skills are essential for the functioning of a vascular surgeon, and are necessary for obtaining information from, and conveying information to patients and their families. Furthermore, these abilities are critical in eliciting patients' beliefs, concerns, and expectations about their illnesses, and for assessing key factors impacting on patients' health.

General Requirements

- Establish therapeutic relationships with patients / families.
- Obtain and synthesize relevant history from patients / families / communities.
- Listen effectively.
- Discuss appropriate information with patients / families and the health care team.

Specific Requirements

- Establish therapeutic relationships with patients that are characterized by understanding, trust, respect, empathy and confidentiality.
- Elicit and synthesize relevant information from the patient, their family, and / or community about his / her problem, while considering the influence of factors such as the patient's age, gender, ethnic, cultural and socioeconomic background, and spiritual values on that illness.
- Discuss appropriate information with the patient and his / her family, and effectively communicate this information with other health care providers that facilitate optimal health care of the patient.

Collaborator

Vascular surgeons work in partnership with others who are appropriately involved in the care of individuals or specific groups of patients. At a given hospital, this is especially evident (but not limited to) in the relationship with interventional radiology during endovascular procedures and both Nephrologist and oncologist for the vascular access. It is therefore essential for vascular surgeons to be able to collaborate effectively with patients and a multidisciplinary team of expert health professionals for provision of optimal patient care, education, and research.

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

- Contribute effectively to other interdisciplinary team activities. This includes activities in hospitals, practice settings, and other institutions, such as committee work, research, undergraduate and postgraduate teaching, and learning.

Manager

Vascular surgeons function as managers when they make everyday practice decisions involving resources, co-workers, tasks, policies, and their personal lives. They do this in the settings of individual patient care, practice organizations, and in the broader context of the health care system. Thus, specialists require the abilities to prioritize and effectively execute tasks through teamwork with colleagues, and make systematic decisions when allocating health care resources.

General Requirements

- Utilize resources effectively to balance patient care, learning needs, and outside activities.
- Allocate health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

- Allocate health care and health education resources effectively.
- Work effectively and efficiently in a health care organization, ranging from national to an individual clinical practice to organizations at the local and regional level
- Understand population-based approaches to health care services and the country health care system and their implication for medical practice.
- Participate in planning, budgeting, evaluation and outcome of a patient care program.
- Effectively utilize information technology such as literature searches and vascular databases to optimize patient care, continued self-learning, and

other activities

- Utilize time and resources effectively in order to balance patient care, earning needs, outside activities, and personal life.

Health Advocate

Vascular surgeons recognize the importance of advocacy activities in responding to the challenges represented by those social, environmental, and biological factors that determine the health of patients and society. They recognize advocacy as an essential and fundamental component of health promotion that occurs at the level of the individual patient, the practice population, and the broader community. Health advocacy is appropriately expressed both by the individual and collective responses of vascular surgeons in influencing public health and policy.

General Requirements

- Identify the important determinants of health affecting patients.
- Contribute effectively to improved health of patients and communities.
- Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

- Identify the risk factors and other determinants of health that affect a patient with vascular diseases, so as to be able to effectively contribute to improving individual and societal health.
- Recognize and respond to those issues, settings, circumstances, or situations in which advocacy on behalf of patients, professions, or society are appropriate.
- Be knowledgeable about the local resources that are available for patient management, support and rehabilitation to improve their physical, and emotional wellbeing.

Scholar

Vascular surgeons engage in a lifelong pursuit of mastery of their domain of professional expertise. They recognize the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the appraisal, collection, and understanding of health care knowledge, and facilitate the education of their students, patients, and others. At a given hospital rotation, regular discussion and critical appraisal of current literature is encouraged during informal bedside patient care discussions as well as during grand rounds and Journal club.

General Requirements

- Develop, implement and monitor a personal continuing education strategy.
- Critically appraise sources of medical information.
- Facilitate learning of patients, house staff / students and other health professionals.
- Contribute to development of new knowledge.

Specific Requirements

- Develop, implement, and document a personal continuing education strategy.
- Apply the principles of critical appraisal to sources of medical information by incorporating a spirit of scientific enquiry and use of evidence into clinical decision-making.
- Demonstrate the ability to select an appropriate question, efficiently search for and assess the quality of evidence in literature and to keep up to date with the evidence-based standard of care for the conditions most commonly seen in his / her vascular practice.

Professional

Vascular surgeons have an important societal role as professionals with a distinct body of knowledge, skills, and attitudes dedicated to improving the health and well being of others. Vascular surgeons are committed to the highest standards of excellence in clinical care and ethical conduct, and to continually perfecting mastery of their discipline. At a given hospital, quality assurance of patient care and procedural results are regularly audited and discussed at the Wednesday complication rounds.

General Requirements

- Deliver highest quality care with integrity, honesty and compassion.
- Exhibit appropriate personal and interpersonal professional behaviors.
- Practice medicine ethically consistent with obligations of a physician.

Specific Requirements

- Deliver the highest quality care with integrity, honesty and compassion including: display attitudes commonly accepted as essential to professionalism.
- Use appropriate strategies to maintain and advance professional competence.
- Continually evaluate one's abilities, knowledge and skills and know one's limitations of professional competence.
- Exercise appropriate judgment of knowing when to refer the patient.
- Exhibit appropriate personal and interpersonal professional behaviors.
- Practice medicine in an ethically responsible manner that respects the medical, legal and professional obligations of belonging to a self-regulating body.

Residency Rotation

Training and Specialty Training Requirements in Vascular Surgery

	July	August	September	October	November	December	January	February	March	April	May	June
PGY1	General surgery			Vascular surgery			Trauma surgery		Plastic surgery		General surgery	
PGY2	Cardiac surgery		Transplant surgery		Vascular surgery		General surgery		Trauma surgery/ ICU		Vascular surgery	
PGY3	Radiology Non Invasive Vascular Diagnosis		Cardiology	Vascular surgery			Cardiac surgery		Pediatric surgery	Thoracic surgery	General surgery	
PGY4	Radiology Intervention / Endovascular Diagnosis and management			Vascular surgery			Vascular surgery			Vascular surgery		
PGY5	Vascular surgery			Vascular surgery			Vascular surgery			Vascular surgery		

The objectives of the Vascular Surgery Training and Specialty Training in Vascular Surgery are to provide a learning and educational environment that facilitates the mentorship and development of expert and competent surgeon-scientists who will have the tools and abilities to become leaders in the field of vascular surgery. Based on these objectives the Residency Rotation block and specialty can be adjusted in a given institute to achieve these objectives in accordance with the Arab Board of Vascular Surgery.

Research goals and objectives for vascular resident

The research is an important part of the practice of vascular surgery. During the residency rotation resident expected to be involved in research in vascular surgery can impact and improve clinical practice.

The objectives is for this rotation are:

1. To understand what constitutes good research
2. How to formulate research questions
3. Learn scientific methodology
4. Avoid pitfalls in research design, and
5. Deal with the obstacles commonly encountered during research.

The program does not expect resident to become expert researchers.

The research rotation allows resident to gain in depth knowledge of the study subject. They will acquire skills in literature search and critical appraisal, and develop collaborative relationships with basic scientists, statisticians, and quality assurance personnel. They will also acquire skills in biostatistics, presentations methods and research paper writing.

Since research is an important part of academic practice, the resident will gain insight into their future career path with regard to academic versus non-academic practice. The broad aim of the Research is to introduce to the trainee the scientific rationale of modern vascular surgery.

Evaluation

- **Clinical Encounter Rating Scales**
- **Global Rating Scale of Operative Performance**
- **Journal Club Evaluation**
- **Evaluations of the Faculty, Resident and Service**
    - **The Vascular Surgery Milestone**
- **Quality Improvement (Morbidity and Mortality)**
- **Vascular trainees procedure registry / log book**

Clinical Encounter Rating Scales

	Unacceptable 1	Inadequate 2	Barely adequate 3	Independent practice 4
Establishes therapeutic relationship				
History – elicits relevant information				
History – explores relevant determinants of health				
Physical examination appropriately				
Physical examination – respect for patient dignity				
Knowledge required to focus assessment of patient problem				
Communication skills				
Time management				
Investigations - use of resources				
Interpretation of test results				
Management plan – appropriate use of consultants and other health care staff				
Management plan – appropriate involvement of referring md				
Response to patient concerns and wishes				
Management plan – overall				
Post-Encounter				
Oral presentation				
Knowledge				
Judgment				
Communication with observer				
OVERALL GLOBAL SCALE				
On this encounter, how would you rate this residence overall performance				

COMMENTS (Please make comments on both good and bad aspects of residence performance):

Surgeons' Signature _____ **Date** ***/ /***

Global Rating Scale of Operative Performance – Evaluation

Name of resident:_____Date:

Please circle the number corresponding to the resident performance regardless of the resident level of training.

Please complete this form and return to vascular office

Respect for tissue				
1	**2**	**3**	**4**	**5**
Frequently used unnecessary force on tissue or caused damage by inappropriate use of instruments		Careful handling of tissue but occasionally caused inadvertent damage		Consistently handled tissue appropriately with minimal damage to tissue
Time and motion				
1	**2**	**3**	**4**	**5**
Many unnecessary moves		Efficient time/motion but some unnecessary moves		Clear economy of movement and maximum efficiency
Instrument handling				
1	**2**	**3**	**4**	**5**
Repeatedly makes tentative or awkward moves with instruments through inappropriate use		Competent use of instruments but occasionally appeared stiff or awkward		Fluid movements with instruments and no stiffness or awkwardness
Knowledge of Instruments				
1	**2**	**3**	**4**	**5**
Frequently asked for wrong instrument or used inappropriate instrument		Knew names of most instruments and used appropriate instrument		Obviously familiar with instruments and used instruments and their names
Flow of Operation				
1	**2**	**3**	**4**	**5**
Frequently stopped operating and seemed unsure of next move		Demonstrated some forward planning with reasonable progression of procedure		Obviously planned course of operation with effortless flow from one move to the next

Use of Assistants (if applicable)				
1	**2**	**3**	**4**	**5**
Consistently placed assistants poorly or failed to use assistants		Appropriate use of assistants most of the time		Strategically used assistants to the best advantage at all times
Knowledge of Specific Procedure				
1	**2**	**3**	**4**	**5**
Deficient knowledge. Required specific instruction at most steps of operation		Knew all important steps of operation		Demonstrated familiarity with all steps of the operation
Overall Performance				
1	**2**	**3**	**4**	**5**
Very poor		Competent		Clearly superior
QUALITY OF FINAL PRODUCT				
1	**2**	**3**	**4**	**5**
Very poor		Competent		Clearly superior

COMMENTS/ Specific Suggestions for Improvement. **Please use reverse.**

Two things this resident did well today:

1) _____

2) _____

Two things that need improvement:

1) _____

2) _____

Surgeons' Signature

Journal Club Evaluation

Name of resident: _____Date:

Please circle the number corresponding to the resident performance.

Please complete this form and return it to Vascular Office

Clearly Presents Summary of Article				
1	**2**	**3**	**4**	**5**
Unacceptable	Inadequate	Barely adequate	Adequate	Outstanding
Accurately Highlights Statistical / Clinical Issues related to the Article				
1	**2**	**3**	**4**	**5**
Unacceptable	Inadequate	Barely adequate	Adequate	Outstanding
Knowledgeable of Literature in the Field				
1	**2**	**3**	**4**	**5**
Unacceptable	Inadequate	Barely adequate	Adequate	Outstanding
Appropriately Describes Impact of this Article in the Field				
1	**2**	**3**	**4**	**5**
Unacceptable	Inadequate	Barely adequate	Adequate	Outstanding
Responds to Audiences Questions Appropriately				
1	**2**	**3**	**4**	**5**
Unacceptable	Inadequate	Barely adequate	Adequate	Outstanding
COMMENTS				
Surgeons Signature:				

Evaluations of the Faculty, Resident and Service

The hospital must ensure that resident, faculty and program performance is continually monitored and assessed. A variety of evaluation methods are necessary for resident and faculty to develop appropriate individualized goals and learning objectives, judge milestone achievement, and make decisions regarding promotion, academic or professional enhancement, probation, suspension, non-promotion, non-renewal, or dismissal. Successful completion of training in any hospital should prepare residents to pass applicable board certification examinations.

Resident education constitutes a progressive learning experience within a complex patient care environment. In order for the residents to develop mature clinical judgment and acquire the procedural skills necessary to perform in a safe and efficient manner, there must be ongoing assessment and feedback involving all elements of the system. The program shall develop and maintain regular, incremental evaluation of residents, faculty, and the program. Evaluations shall be completed and monitored according to the Arab board of surgery common and program requirements as well as institutional norms.

Faculty evaluators should be aware that evaluations of resident performance must be confidential but accessible for review by the trainee so they have an opportunity to discuss a poor evaluation, and identify areas of deficient performance for resolution with the faculty who provided the evaluation.

Evaluations by non-faculty evaluators (nurses, PA's, peers, etc.) are confidential and the trainee is not provided information as to who provided the evaluation.

Each program maintains a trainee file that must include, at a minimum, the semi-annual reviews and a final summative evaluation. In addition, any disciplinary or remediation materials should also be retained. All programs maintain physical files; electronic evaluations are maintained in New Innovations into perpetuity.

Results of evaluations provided now may be accessible into the future, as may be required by credentialing verification procedures throughout the trainee's career.

The program director must appoint a Clinical Competency Committee (CCC). At a minimum, the CCC must be composed of three members of the program faculty. Other eligible participants on the CCC include faculty from other programs and non-physician members of the health care team.

There must be a written description of the responsibilities of the CCC and the committee should provide objective assessments of competence in patient care and procedural skills, medical knowledge, practice based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice using specialty-specific milestones and document progressive resident performance improvement appropriate to the educational level of the resident at least semi-annually.

Evaluation of resident performance includes the following activities:

Formative Evaluations of Residents by Faculty: The faculty must evaluate resident performance in a timely manner during each rotation or similar educational experience and document this evaluation within two weeks of completion of the assignment. The faculty evaluation of the resident should indicate if the trainee successfully completed the rotation or learning experience. Faculty must provide written and verbal feedback. At a minimum, performance should be evaluated in writing, at least quarterly, so that potential learning deficiencies do not go unrecognized. The evaluations must indicate the name of the evaluating faculty so the resident has an opportunity to follow up with that faculty and rectify any concerns or deficiencies identified in the evaluation.

Semi-Annual Evaluations: Program director must provide each resident with a one to one documented performance evaluation summary at least semi-annually, incorporating input from the Clinical Competency Committee.

Source of Evaluation Input: Program directors must obtain and incorporate evaluative input from multiple sources as appropriate / available for the specialty or service.

Summative Evaluations: The Program director must provide each resident with a documented final summative evaluation report on completion of the program or if the resident is dismissed or transfers to another program. The evaluation must be competency based and incorporating input from the Clinical Competency Committee.

Faculty Performance Evaluation:

Resident Evaluation of Faculty: Residents must be given the opportunity to submit written confidential evaluations of the faculty at the end of every rotation.

Confidentiality: Resident evaluator names are not included in evaluations released to the faculty. Programs maintain confidentiality by holding completed evaluations to ensure anonymity is attained or by aggregating evaluations and providing them to faculty in an annual summary report.

Ongoing Monitoring of Faculty Performance: The program must have a process to evaluate each faculty member's performance as it relates to the educational program at least annually. This evaluation must include a review of the faculty member's clinical teaching abilities, engagement with the educational program, participation in faculty development related to their skills as an educator, clinical performance, professionalism, and scholarly activities. Program directors monitor faculty performance on an ongoing basis.

Notification of Faculty Performance: Division Chiefs and/or Department Chairs shall be provided reports of faculty performance at least annually or within one month of an unsatisfactory evaluation score from more than one resident. Faculty members must receive feedback on their evaluations at least annually.

Rotation Evaluations:

Programs must offer residents opportunities to provide confidential written evaluative input on their rotations at least annually. In order to maintain confidentiality of residents programs have the following options:

Resident evaluation of Rotation: Residents must be given the opportunity to submit confidential evaluations of rotations at least annually.

The Vascular Surgery Milestone

The vascular surgery milestone is based on the Accreditation Council for Graduate Medical Education USA. The Milestones provide a framework for the assessment of the development of the resident in key dimensions of the elements of physician competence in a specialty or subspecialty.

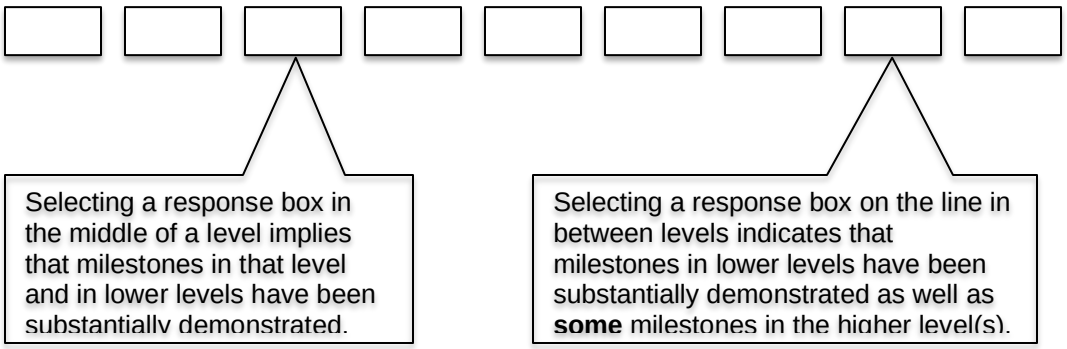
Milestones are arranged into levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert resident in the specialty. For each reporting period, the Clinical Competency Committee will review the completed evaluations to select the milestone levels that best describe each learner's current performance, abilities, and attributes for each sub-competency.

There is no predetermined timing for a resident to attain any particular level. Resident may also regress in achievement of their milestones. This may happen for many reasons, such as over scoring in a previous review, a disjointed experience in a particular procedure, or a significant act by the resident.

Selection of a level implies the resident substantially demonstrates the milestones in that levels, as well as those in lower.

Level 4 is designed as a graduation goal but does not represent a graduation requirement. Making decisions about readiness for graduation and unsupervised practice is the purview of the program director. Furthermore, Milestones 2.0 include revisions and changes that preclude using Milestones as a sole assessment in high-stakes decisions (i.e., determination of eligibility for certification or credentialing). Level 5 is designed to represent an expert resident whose achievements in a sub-competency are greater than the expectation. Milestones are primarily designed for formative, developmental purposes to support continuous quality improvement for individual learners, education programs, and the specialty.

Level 1	Level 2	Level 3	Level 4	Level 5
Elicits and presents a history and performs a vascular examination relevant to the patient's presenting complaint	Orders and interprets diagnostic testing; establishes differential diagnosis	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for basic disease processes, to include primary and secondary treatment options	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for complex disease processes with advanced comorbidities, to include primary and secondary treatment options	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for rare disease processes and variants of complex disease processes



Comments:

Not Yet Completed Level 1

Not Yet Assessable

Please select a box and write your comments.

Vascular Surgery Milestones, Report Worksheet

This table summarizes the 6 elements of physician competence.

Patient Care	**Medical Knowledge**	**Systems-Based Practice**	**Practice-Based Learning and Improvement**	**Professionalism**	**Interpersonal and Communication Skills**
1: Patient Data	1: Procedural Rationale (Open Surgical Procedures)	1: Patient Safety	1: Evidence-Based and Informed Practice	1: Professional Behavior	1: Patient- and Family-Centered Communication
2: Medical Management of Vascular Disease	2: Procedural Rationale (Endovascular Interventions)	2: Quality Improvement	2: Reflective Practice and Commitment to Personal Growth	2: Ethical Principles	2: Inter-professional and Team Communication
3: Peri-Operative Care	3: Procedural Understanding, including Anatomy (Open Surgical Procedures)	3: System Navigation for Patient-Centered Care		3: Accountability / Conscientiousness	3: Communication within Health Care Systems
4: Longitudinal Care (e.g., Outpatient Management, Screening, Surveillance)	4: Procedural Understanding, including Anatomy (Endovascular Procedures)	4: Population Health		4: Self-Awareness and Help-Seeking	
5: Procedural Preparation	5: Intra-Operative Crisis Management	5: Physician Role in Health Care Systems			
6: Technical Skills – Open Surgical Skills		6: Radiation Safety			
7: Technical Skills – Endovascular					
8: Vascular Imaging (e.g., Computed Tomography [CT], Magnetic Resonance [MR], Angiography, Ultrasonography)					

(https://www.acgme.org/globalassets/pdfs/milestones/vascularsurgerymilestones.pdf)

Patient Care 1: Patient Data				
Level 1	Level 2	Level 3	Level 4	Level 5
Elicits and presents a history and performs a vascular examination relevant to the patient's presenting complaint	Orders and interprets diagnostic testing; establishes differential diagnosis	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for basic disease processes, to include primary and secondary treatment options	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for complex disease processes with advanced comorbidities, to include primary and secondary treatment options	Synthesizes patient data, including diagnostic imaging, to arrive at an organized hierarchical differential diagnosis for rare disease processes and variants of complex disease processes

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 2: Medical Management of Vascular Disease

Level 1	Level 2	Level 3	Level 4	Level 5
Describes risk factors for vascular disease	Identifies therapies for risk factor modification	Recognizes endpoints, contraindications, and complications of medical therapy	Formulates a comprehensive plan of medical management for patients with vascular disease, including risk factor modification	Proposes novel medical treatment algorithms based on new literature

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 3: Peri-Operative Care

Level 1	Level 2	Level 3	Level 4	Level 5
Manages basic peri-operative problems (e.g., fever, pain)	Manages common peri- operative problems (e.g., post-operative myocardial infraction), including ordering and interpretation of supplemental tests when needed	Recognizes and manages complex peri-operative problems, including vascular complications, critical care, and palliative care	Leads team and provides supervision in the evaluation and management of complex peri-operative problems, including vascular complications, critical care, and palliative care	Works with the interdisciplinary care team to develop new pathways to prevent peri-operative vascular complications

Comments:

Not Yet Completed Level 1 

Not Yet Assessable 

Patient Care 4: Longitudinal Care (e.g., Outpatient Management, Screening, Surveillance)

Level 1	Level 2	Level 3	Level 4	Level 5
Describes and recognizes expected longitudinal care, including outpatient management, screening, and surveillance for patients with basic vascular disease	Describes the expected longitudinal care for patients with complex vascular disease	Recognizes the impact of disease progression and complications on the longitudinal care plan	Independently alters longitudinal care based on disease progression, complications, or patient-specific issues	Innovates new aspects of longitudinal care for patients with vascular disease by considering the most updated evidence-based guidelines

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 5: Procedural Preparation

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies and orders the tests for standard pre-operative optimization Prepares patient for surgery, including pre- operative orders and diagnostic tests	Interprets clinical data to identify opportunities for pre-operative optimization For basic procedures, ensures necessary imaging, instrumentation, equipment, devices, and medications are available; positions, prepares, and drapes patient appropriately	Recognizes when procedural plan must change due to patient factors or disease progression identified in pre-operative work-up For intermediate procedures, ensures necessary imaging, instrumentation, equipment, devices, and medications are available; positions, prepares, and drapes patient appropriately	Proposes alternative surgical plan due to patient factors or disease progression identified in pre-operative work-up For advanced procedures, ensures necessary imaging, instrumentation, equipment, devices, and medications are available; positions, prepares, and drapes patient appropriately	Proposes novel therapies to address a patient that is not a candidate for standard care Develops protocols to improve the procedural preparation process

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 6: Technical Skills – Open Surgical Skills

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates basic surgical skills and performs basic bedside procedures	Demonstrates respect for tissue, and is developing skill in instrument handling Performs basic vascular procedures with limited supervision	Handles vascular instruments with increasing efficiency of motion during procedures Performs basic vascular procedures independently and intermediate vascular procedures with limited supervision	Proficiently handles instruments and equipment, uses assistants, guides the conduct of the operation, and makes independent intra- operative decisions; anticipates when assistance is needed Performs advanced vascular procedures, including troubleshooting and managing complications with limited supervision	Handles instruments and equipment independently without supervision, guides the conduct of the operation, and makes intra-operative decisions Competently teaches intermediate vascular procedures

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 7: Technical Skills – Endovascular

Level 1	Level 2	Level 3	Level 4	Level 5
Uses ultrasound to demonstrate anatomy for vascular access Recognizes the importance of maintaining wire position during wire and catheter exchanges	Uses ultrasound to safely obtain percutaneous arterial and/or venous access in most patients Selects wires and catheters and demonstrates basic wire handling techniques and performs most catheter exchanges without losing wire position	Performs basic and intermediate procedures Troubleshoots and manages basic procedural challenges	Performs advanced endovascular procedures with appropriate wire and catheter skills Identifies when to select an alternative access site, wire and catheter technique, or approach to troubleshoot complex procedural challenges	Suggests novel endovascular therapies for most complex cases, including troubleshooting and managing endovascular complications

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Patient Care 8: Vascular Imaging (e.g., Computed Tomography [CT], Magnetic Resonance [MR], Angiography, Ultrasonography)

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the various types of imaging modalities	Uses imaging findings to support differential diagnosis and pre- operative plan for basic vascular procedures Describes patient factors that influence the imaging modality	Uses imaging findings to support differential diagnosis and pre- operative plan for intermediate vascular procedures Uses complementary information from varying imaging studies	Uses imaging findings to support differential diagnosis, pre-operative plan, and intra-operative decision making for advanced vascular procedures Independently uses multidimensional imaging (e.g., 3-D computed tomography angiography [CTA]) and identifies abnormal findings	Implements innovative imaging technology to enhance the care of the patient Teaches imaging interpretation of multiple modalities

Comments:

Not Yet Completed Level 1 

Not Yet Assessable 

Medical Knowledge 1: Procedural Rationale (Open Surgical Procedures)

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the need for intervention over medical management	Synthesizes clinical data to choose an open surgical procedure versus endovascular intervention	Develops a specific operative plan for the current clinical situation, understanding alternative surgical options	Adapts management plan for changing clinical situation	Develops new guidelines or innovative applications

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Medical Knowledge 2: Procedural Rationale (Endovascular Interventions)

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the need for intervention over medical management	Synthesizes clinical data to choose an endovascular intervention versus open surgical procedure	Develops a specific endovascular plan for the current clinical situation, understanding device instructions for use and limitations	Adapts management plan for changing clinical situation and understands alternative or off label endovascular options	Develops new guidelines or innovative applications

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Medical Knowledge 3: Procedural Understanding, including Anatomy (Open Surgical Procedures)

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the types of procedures for a patient's pathology Identifies appropriate procedure	Describes procedural sequence and equipment needs, and understands critical decision points of basic procedures	Describes procedural sequence and equipment needs, and understands critical decision points of intermediate procedures	Describes procedural sequence and equipment needs, and understands critical decision points of advanced procedures	Describes or develops an innovative approach in peer-reviewed literature

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Medical Knowledge 4: Procedural Understanding, including Anatomy (Endovascular Procedures)

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies the types of procedures for a patient's pathology	Describes procedural sequence and understands critical decision points of basic procedures	Describes procedural sequence and equipment needs, and understands critical decision points of intermediate procedures	Describes procedural sequence and equipment needs, and understands critical decision points of advanced procedures	Describes or develops an innovative approach in peer-reviewed literature

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Medical Knowledge 5: Intra-Operative Crisis Management

Level 1	Level 2	Level 3	Level 4	Level 5
Describes potential crises during vascular procedures	Describes intra-operative findings associated with a crisis	Describes appropriate response to a crisis, including imaging and possible interventions	Anticipates patient-specific risk for crisis and describes appropriate treatment algorithm and potential outcomes, including conversion to an alternate procedure	Describes, develops, or publishes an innovative approach or otherwise impacts patient care, delivery, or quality

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Systems-Based Practice 1: Patient Safety

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of common patient safety events Demonstrates knowledge of how to report patient safety events	Identifies system factors that lead to patient safety events Reports patient safety events through institutional reporting systems (simulated or actual)	Participates in analysis of patient safety events (simulated or actual) Participates in disclosure of patient safety events to patients and their families (simulated or actual)	Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual) Discloses patient safety events to patients and their families (simulated or actual)	Actively engages teams and processes to modify systems to prevent patient safety events Role models or mentors others in the disclosure of patient safety events

Comments:

Not Yet Completed Level 1 

Not Yet Assessable 

Systems-Based Practice 2: Quality Improvement

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of basic quality metrics and quality improvement methodologies	Describes local quality improvement initiatives (e.g., infection rate, smoking cessation)	Participates in local quality improvement initiatives	Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	Creates, implements, and assesses quality improvement initiatives at the institutional or community level

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Systems-Based Practice 3: System Navigation for Patient-Centered Care

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of care coordination Identifies key elements for safe and effective transitions of care and hand-offs	Coordinates multidisciplinary care of patients in routine clinical situations effectively using the roles of the interprofessional team members Performs safe and effective transitions of care/hand-offs in routine clinical situations	Synthesizes Coordinates multidisciplinary care of patients in complex clinical situations, including those with barriers to access, effectively using the roles of the interprofessional team members Performs safe and effective transitions of care/hand-offs in complex clinical situations	Role models effective coordination of patient- centered care among different disciplines and specialties Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems, including outpatient settings	Analyzes the process of care coordination and leads in the design and implementation of improvements Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes

Comments:

Not Yet Completed Level 1 

Not Yet Assessable 

Systems-Based Practice 4: Population Health

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of population and community health needs and disparities	Identifies specific population and community health needs and inequities for their local population	Uses local resources effectively to meet the needs of a patient population and community	Participates in changing and adapting practice to provide for the needs of specific populations	Leads innovations, publishes peer-reviewed paper, or advocates for populations and communities with health care inequities

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Systems-Based Practice 5: Physician Role in Health Care Systems

Level 1	Level 2	Level 3	Level 4	Level 5
Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology) Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models	Describes how components of a complex health care system are interrelated, and understands how this impacts patient care Delivers care with consideration of each patient's payment model (e.g., insurance type) Identifies the need for timely documentation to support billing	Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency) Engages with patients in shared decision making, informed by each patient's payment models Demonstrates use of information technology required for medical practice	Manages various components of the complex health care system to provide efficient and effective patient care and transitions of care Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model Demonstrates core administrative knowledge needed for transition to practice	Advocates for or leads systems change that enhances high-value, efficient and effective patient care and transitions of care Participates in local, regional, or national health policy advocacy activities Proposes changes to patient care or billing practices to improve compliance and reimbursement

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Systems-Based Practice 6: Radiation Safety

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the mechanisms of radiation injury and the ALARA ("as low as reasonably achievable") concept Wears lead apron and dosimeter at all times	Applies principles of ALARA in daily practice Uses fluoroscopy techniques that decrease exposure, with guidance Uses radiation protection devices, including shielding, as appropriate, with guidance	Accesses resources to determine exam-specific radiation dose information Independently uses radiation protection devices, including shielding, as appropriate	Communicates the relative risk and benefits of exam-specific radiation exposure to patients and practitioners Counsels colleagues and allied health staff regarding radiation exposure	Creates, implements, and assesses radiation safety initiatives at the institutional level Participates in radiation safety education and research

ALARA: "As Low As Reasonably Achievable"

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates effective access and use of available evidence to guide routine patient care	Articulates clinical questions and elicits patient preferences and values to guide evidence- based care	Identifies and applies the best available evidence and integrates data to the care of complex patients	Critically appraises and applies evidence, even in the face of uncertainty and conflicting evidence, to guide care tailored to the individual patient	Coaches others to critically appraise and apply evidence for complex patients, and/or participates in the development of peer- reviewed literature or guidelines

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth

Level 1	Level 2	Level 3	Level 4	Level 5
Establishes goals for personal and professional development	Identifies opportunities for performance improvement; designs a learning plan	Integrates performance feedback and practice data to develop and implement a learning plan	Revises learning plan based on performance data	Coaches others in the design and implementation of learning plans

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Professionalism 1: Professional Behavior

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates insight into professional behavior in routine situations and takes responsibility for own lapses	Identifies and describes potential triggers for professionalism lapses and when to report lapses in professionalism	Demonstrates professional behavior in complex or stressful situations and when to seek help to resolve complex ethical situation	Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in oneself and others	Coaches others when their behavior fails to meet professional expectations

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Professionalism 2: Ethical Principles

Level 1	Level 2	Level 3	Level 4	Level 5
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	Applies ethical principles to straightforward situations	Applies ethical principles to complex situations	Resolves ethical dilemmas using appropriate resources (e.g., ethics consultations, literature review, risk management/legal consultation)	Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Professionalism 3: Accountability/Conscientiousness

Level 1	Level 2	Level 3	Level 4	Level 5
Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations	Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations	Takes responsibility for failures, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future	Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner, and proactively implements strategies to ensure the needs of the patient and team are met	Takes ownership of system outcomes and works toward system-level changes

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Professionalism 4: Self-Awareness and Help-Seeking

Level 1	Level 2	Level 3	Level 4	Level 5
With assistance, recognizes status of personal and professional well-being	Independently recognizes status of personal and professional well-being	With assistance, proposes a plan to optimize personal and professional well-being	Independently develops a plan to optimize personal and professional well being	Coaches others when emotional responses or limitations in knowledge/skills do not meet professional expectations

Comments:

Not Yet Completed Level 1

Not Yet Assessable

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication

Level 1	Level 2	Level 3	Level 4	Level 5
Communicates with patients and their families in an understandable and respectful manner Provides timely updates to patients and their families	Customizes communication, in the setting of personal biases and barriers (e.g., age, literacy, cognitive disabilities, cultural differences) with patients and their families Actively listens to patients and their families to elicit patient preferences and expectations	Delivers complex and difficult information to patients and their families Uses shared decision making to make a personalized care plan	Facilitates difficult discussions specific to patient and patient family's conferences, (e.g., end-of-life, explaining complications, therapeutic uncertainty) Effectively negotiates and manages conflict among patients, their families, and the health care team	Coaches others in the facilitation of difficult and crucial conversations Coaches others in conflict resolution

Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Interpersonal and Communication Skills 2: Interprofessional and Team Communication

Level 1	Level 2	Level 3	Level 4	Level 5
Uses language that values all members of the health care team Open to feedback on performance as a member of the health care team	Communicates information effectively and concisely with all health care team members Solicits feedback on performance as a member of the health care team	Uses active listening to adapt communication style to fit team needs Communicates concerns and provides feedback to peers and learners	Coordinates recommendations from different members of the health care team to optimize patient care Facilitates regular health care team-based feedback in complex situations	Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed Communicates feedback and constructive criticism to superiors

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Interpersonal and Communication Skills 3: Communication within Health Care Systems

Level 1	Level 2	Level 3	Level 4	Level 5
Accurately records information in the patient record, including appropriate use of documentation templates	Appropriately selects form and urgency of communication based on context	Demonstrates efficient use of electronic health record (EHR) to communicate with the health care team	Integrates and synthesizes all relevant data from outside systems and prior encounters into the EHR	Guides departmental or institutional communication around policies and procedures

HER: Electronic Health Record

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Comments:

Not Yet Completed Level 1 ☐

Not Yet Assessable ☐

Quality Improvement

(Morbidity and Mortality)

Quality of care is characterized as:

"The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with the current professional knowledge"

(Institute of Medicine, 1999)

Quality Improvement can be defined as "*the optimization of resources to produce good health".* QI evaluates the performance of both: Individual providers and the systems in which they work.

- **Three elements of quality:**

    1. **Structure** refers to stable, material characteristics (infrastructure, tools, technology) and the resources of the organizations that provide care and the financing of care (levels of funding, staffing, training, skills, payment schemes, incentives)

    2. **Process** is the interaction between care-givers and patients during which structural inputs from the health care system are transformed into health outcomes. The process is the actual provision of medical care to the patient

3. **Outcomes** can be measured in terms of health status, deaths, or disability-adjusted life years – a measure that encompasses the morbidity and mortality of patients or groups of patients. Outcomes also include patient satisfaction or patient response to the health care system

Morbidity and Mortality meetings (M&Ms) or clinical review meetings allow departments/ specialties/ facilities to review the quality of the care that is being provided to their patients and to identify any opportunities for improvement. Reference for the “Guidelines for Conducting and Reporting Morbidity and Mortality/Clinical / Review Meetings”.

https://www.cec.health.nsw.gov.au/__data/assets/pdf_file/0003/602697/Guidelines-for-Conducting-and-Reporting-Morbidity-and-Mortality.pdf

Meeting is held in regular bases to review cases with unexpected outcomes (death, complications, etc.). The resident present based on schedule within the vascular department and follows the guidelines of reporting of M&M.

Vascular Trainees Procedure Registry / LOGBOOK

In the Logbook all procedures for which the resident record based on date, type of operation, principle or assistant operator is recorded individually. Although for privacy reasons patient identification should be removed, all procedures should be traceable with the possibility to be verified (e.g. date of procedure and patient).

Example of a logbook below

	Date	Patient		Operator		Procedure
		#	Gender	Assistant	Principle	
1						
2						
3						
4						
5						
6						

Specific Standards of Accreditation for the Programs in Vascular Surgery

- **Authority**
- **Training sites**
- **Program director**
- **Program local director**
- **Program faculties**
- **Local coordination system**

Authorities:

- The affairs of training and education are the duties of the training, categorization and accreditation committee. The affairs of examinations are the duty of the examination and documentation committee.

Training sites:

- Should be organized in a department/s or independent section/s with a chief or chiefs if within a surgical department. They should meet the accreditation criteria of the Arab Board of Vascular Surgery Residency Program.
  - Documentation of the educational and training program in accordance with current Arab Board of Vascular Surgery Residency Program.
  - Adequate and diverse patient population with vascular disease.
  - Adequate consultation rooms.
  - Program director, appropriate faculties, nursing, and secretarial staff.
  - Study space and desks for residents.

- Efficient electronic presentation equipment, activity hall / classroom.
- Access to library or online for education, references Up-to-date, etc.
- Appropriate office facilities for the program director and faculties.
- Adequate financial support.
- Annual report: The report has to be sent to the training, recognition and accreditation committee on annual basis. The accreditation is either full or conditional in which case a date has to be set up for re-evaluation. An affiliation agreement between the sponsoring and affiliated departments has to be signed.

Program Director:

The operation of the Arab Board of Vascular Surgery Residency Program in single sponsoring department is managed by a program director.

The program director should:

- Be Certified Board in Vascular surgery or an equivalent certificate
- Have reasonable administrative and research experience.
- The nominations for program directors and local directors have to be endorsed by the local institute and indorsed by the Arab Board of Vascular Surgery at the ABHS.

The following are the duties of the program director:

1. Understands the various components of the Arab Board of Vascular Surgery Residency Program

2. Plan and implements the learning experiences and methods of learning.

3. Assures and oversees the clinical training of residents, and the running of educational activities.

4. Engages faculties in the management of all aspects; administrative, educational, training and resident evaluation.

5. Oversees the implementation of the Arab Board of Vascular Surgery Residency Program in all affiliated departments.

6. Designates program faculties.

7. Assures the compliance with the regulations, policy and procedures of the training institutes.

8. Participates in the training and educational activities of the program, research and continual professional development.

9. Plans the rotations of residents, and their team working with all program faculties to ensure practical contact with the various expertise.

10. Manages the timetables of clinical work of residents with regards to outpatient, inpatient and on-calls duties.

11. Maintains the timetables of daily working hours, annual vacation plan of the residents.

12. Distributes opportunities of the off-the job training and education i.e conferences and courses, among residents.

13. Supervise and monitor the performance of residents, and identify knowledge and practical gaps, and suggest to the residents corrective activities.

14. Reports the resident summative evaluation.

15. Supervises the maintaining and accuracy of the Resident's professional

and educational record book.

16. Approves the subject of resident's research project, designates a supervisor for the project and follows up the execution of the project.

17. Designates and defines the duties of the chief resident taking in consideration the training and educational priorities of the chief resident.

18. Delegates the duties of program director to an acting program director in periods of time off - work

19. Assures the safe keeping of all documents

20. Coordinates the smooth and appropriate running of Arab Board of Vascular Surgery Residency Program in department running other postgraduate programs.

21. Conducts regular meetings with the residents to address their concerns and suggestions.

22. Conducts regular joint meetings with the local program directors and faculties to address various issues of the program.

23. Contributes to the evaluation of the Arab Board of Vascular Surgery Residency Program and make suggestions to improve the program.

Program faculties:

There should be sufficient number of faculties to implement the Arab Board of Vascular Surgery Residency Program. Program faculties are consultants and senior specialists. Program faculties should have strong interest in the training and education of residents and be engaged in research and continual

professional development. Program faculties should have adequate office facilities to run the educational, training and administrative affairs.

The following are the duties of program faculties:

12. Maintain an active learning and training environment.
13. Supervise closely the residents during their clinical practice.
14. Conduct educational and training activities according to the learning methods of the Arab Board of Vascular Surgery Residency Program.
15. Attend the educational activities and participate actively in the after- the presentation discussions.
16. Participate in the running of the administrative affairs of the Arab Board of Vascular Surgery Residency Program.
17. Participate in the meetings called by the program director.
18. Participate in the formative and summative evaluation of residents.
19. Make suggestions to the program director or local director regarding the Arab Board of Vascular Surgery Residency Program.
20. Report incidences related to residents to the program director.
21. Participate in the regular evaluation of the program.
22. Support and advocate for Arab Board of Vascular Surgery Residency Program.

Policies and Procedures for Certification

Entry requirements:

- The candidate should hold an MBBS or equivalent degree from a recognized medical college
- Have successfully completed one year of internship
- Holds national license to practice medicine
- The fees and completed registration forms have to be submitted to ABHS in advance of the beginning of the Arab board of Vascular Surgery Residency Program

Number of residents in training departments:

- According to the facilities of the department and the Arab Board regulation of Health Specializations

Examination:

- Progression of residents and entry to examination are according to rules and regulation of the Arab Board Of Health Specializations.
- Certification as a diplomat of the ABHS: Passing the final examination and recommendation from the examination and documentation committee are requirements.

Arab Board of Vascular Surgery Examination

The Arab Board of Vascular surgery Examination consists of two parts.

1. The first examination is **Arab Board of Vascular Surgery foundation Examination** after the completion of the two years foundation training and core surgical training. This is multiple-choice questions examination. This is "250" multiple-choice questions designed to assess a surgeon's cognitive knowledge of foundation surgery and vascular surgery.
    i. It is a one-day exam lasting approximately 4-6 hours.
    ii. The exam is administered in two 120-180 minute sessions, with 60-minute break between the sessions.
    iii. Successfully pass multiple-choice examination is requirement to the second part board Qualification Examination.

2. The second part is the **Arab Board of Vascular Surgery Qualifying Examination.** Is offered annually as the first of two exams required for board certification in vascular surgery.
    a. The first exam consists of about "250" multiple-choice questions designed to assess a surgeon's cognitive knowledge of core

surgery and vascular surgery.

i. It is a one-day exam lasting approximately 4-6 hours.
ii. The exam is administered in two 120-180 minute sessions, with 60-minute break between the sessions.
iii. Successfully pass multiple-choice examination is requirement to the second step board certification in Arab Board of Vascular Surgery.

b. The **Arab Board of Vascular Surgery Certifying Examination** is the last step toward board certification in vascular surgery. It is an oral exam consisting of 3 consecutive 30-minute sessions, each conducted by a team of 2 examiners or Objective Structured Clinical Examination (OSCE) with multiple stations.

i. Its purpose is to evaluate a candidate's clinical skills in organizing the diagnostic evaluation and management of common problems in vascular surgery.
ii. Emphasis is placed on candidates' ability to use their knowledge and training to safely, effectively and promptly manage a broad range of clinical problems.

Noninvasive Vascular Laboratory

Interpretation and clinical use of noninvasive vascular laboratory studies is an integral part of taking care of patients with vascular disease. To provide the

best care for patients, it is imperative that vascular surgeons are able to understand and interpret vascular studies, and not simply relies on preliminary interpretations provided by sonographers. The Noninvasive Vascular Laboratory Studies will depend on vascular anatomy, physiology, or physics as applied to ultrasound, and therefore depend on the vascular surgeon to provide an accurate interpretation.

Starting in 2014, candidates for vascular surgery board certification in USA have been required to obtain the Registered Physician in Vascular Interpretation (RPVI) designation before registering for the vascular surgery-certifying exam due to the importance of noninvasive vascular laboratory. In the same way we consider The Arab Board of Vascular Surgery “Registered Physician in Vascular Interpretation (RPVI)” or “Diploma in Vascular Interpretation” as part of the requirement for the vascular surgery board examination.

Vascular Laboratory Curriculum

Institute to implement the Arab Board of Vascular Surgery Residency Program need to have a structured vascular laboratory curriculum for vascular surgery trainees.

The consensus among vascular surgery educators in USA is that it is important to provide vascular surgery residents and fellows with formal Noninvasive Vascular Laboratory training to prepare them to not only pass the RPVI exam but also acquire expertise in reading studies as practitioners

and ability to supervise sonographers. There is wide variation in vascular laboratory experience among training programs. The time dedicated to Noninvasive Vascular Laboratory training also varies among vascular surgery programs in USA, and for the most part, appears insufficient, as overall interpretation experience is reported to be as low as 20 hours over the course of training. Therefore we do recommend 40 hours of observation or supervised participation in the Noninvasive Vascular Laboratory training and 30 hours of didactic instruction related to interpretation or Noninvasive Vascular Laboratory training educational topics for the programs.

The Arab Board of Vascular Surgery "Registered Physician in Vascular Interpretation (RPVI)" or "Diploma in Vascular Interpretation" Noninvasive Vascular Laboratory Curriculum "Outline"

		Content %	Knowledge
Peripheral Arterial - Duplex Imaging	Dialysis Access; Interpretation of Duplex Imaging; Postoperative Endovascular Intervention	15%	Anatomy and variation, Doppler principles, physiology of blood flow, velocity criteria, common arterial and venous disorders and pathologies associated with all vascular beds, advanced imaging technologies, contrast agents, common invasive and other noninvasive diagnostic tests, quality assurance principles and techniques, reporting standards, accreditation standards, basic statistics.
Peripheral Arterial - Physiologic	Ankle Brachial Index/Pulse Volume Recording; Digital Evaluation	20%	
Peripheral Venous	Vein Mapping, Venous Thrombosis/ Obstruction, Venous Insufficiency Testing	20%	
Cerebrovascular	Extracranial and Intracranial Carotid	15%	
Abdominal	Aortoiliac; Liver; Mesenteric; Renal	15%	
Laboratory Technology and Operations	Patient Care, Physics and Instrumentation, Quality Assurance	15%	

The curriculum should provide a comprehensive review of Noninvasive Vascular

Laboratory training, educational and knowledge that prepares vascular trainees not only for the certification but also prepares them to provide expert patient care.

The Arab Board of Vascular Surgery "Registered Physician in Vascular Interpretation (RPVI)" or "Diploma in Vascular Interpretation" Noninvasive Vascular Laboratory certification

The examination for the Arab Board of Vascular Surgery "Registered Physician in Vascular Interpretation (RPVI)" or "Diploma in Vascular Interpretation" Noninvasive Vascular Laboratory certification exam consists of about "100" multiple-choice questions designed to assess a surgeon's cognitive knowledge of Noninvasive Vascular Laboratory.

- It will take place after the third year of training.
- It is a one-day exam lasting approximately 2-3 hours.

Clinical Curriculum for Vascular Surgery

Diagnosis and Management of Aneurysmal Disease

Includes:

- Aortic and Iliac Artery Aneurysms
- Peripheral Artery Aneurysms
- Extra-cranial Carotid Aneurysms
- Subclavian/Axillary Artery Aneurysms
- Femoral/Popliteal Artery Aneurysms
- Splanchnic and Renal Artery Aneurysms
- Thoracoabdominal Aortic Aneurysms
- Thoracic Aortic Aneurysms
- Thoracic/Abdominal Aortic Dissection

Diagnosis and Management of Extremity Arterial Occlusive Disease

Includes:

- Aortoiliac Occlusive Disease
- Femoral-Popliteal-Tibial Occlusive Disease
- Upper Extremity Occlusive Disease
- Combined Aortoiliac and Infrainguinal Occlusive Disease
- Arterial Bypass Graft Surveillance
- Failing Arterial Bypass Graft
- Ischemic Foot Lesions

Diagnosis and Management of Renal Artery Occlusive Disease

Includes:

- Reno-vascular Hypertension
- Ischemic Nephropathy
- Renal Artery Surgery
- Renal Angioplasty
- Diagnostic Studies to Detect Functionally Significant

- Renal Artery Stenosis

Additional Important/None-Core Curriculum Topics:

- Renal Arteriovenous Fistulae

Diagnosis and Management of Visceral Ischemia

Includes:

- Chronic Visceral Ischemia
- Acute Visceral Ischemia
- Non-Occlusive Mesenteric Ischemia
- Mesenteric Venous Occlusive Disease

Additional Important/Non-Core Curriculum Topics:

- Celiac/SMA Compression

Diagnosis and Management of Carotid Artery Occlusive Disease

Includes:

- Atherosclerotic Carotids Artery Disease
- Carotid Artery Fibro muscular Dysplasia
- Carotid Artery Coils and Kinks
- Carotid Artery Radiation Injury
- Carotid Body Tumor
- Overall Management of Stroke
- Spontaneous Carotid Artery Dissection
- Atherosclerotic Aortic Arch Disease Leading to Proximal Carotid Artery Stenosis

Diagnosis and Management of Innominate, Subclavian and Vertebro-basilar Arterial Disease

Includes:

- Stenotic and Embolic Innominate Artery Disease
- Stenotic and Embolic Vertebral Artery Disease

- Stenotic and Embolic Subclavian Artery Disease
  Subclavian Steal Syndrome

Additional Important/Non-Core Curriculum Topics:

- Vertebral Arteriovenous Fistulae

Diagnosis and Management of Thoracic Outlet Syndrome

Includes:

- Cervical Rib/Abnormal First Rib
- Arterial Complications
- Venous Complications
- Neurogenic Complications

Diagnosis and Management of Acute Arterial Occlusion

Includes:

- Acute Thrombotic Disease
- Athero-embolic Disease
- Thrombo-embolectomy Techniques
- Thrombolysis: Percutaneous & Intraoperative
- Systemic Complications of Reperfusion Injury
- Compartment Syndrome

Diagnosis and Management of Diabetic Foot Problems

Includes:

- Pathophysiology of Ischemia, Neuropathy and Infection
- Antibiotic Treatment
- Amputation Types
- Wound Management
- Foot Care

Additional Important/Non-Core Curriculum Topics:

- Orthotic Management

Diagnosis and Management of Complications of Vascular Therapy

Includes:

- Pseudoaneurysm
- Aortoenteric Fistulae/Erosions
- Vascular Graft Infections
- Colon Ischemia after Aortic Surgery
- Chronic Perigraft Seromas
- Occluded Prosthetic Grafts
- Prosthetic Graft Dilation

Diagnosis and Management of Vascular Trauma

Includes:

- Aortic Trauma
- Carotid Trauma
- Brachiocephalic Trauma
- Visceral Arterial Trauma
- Extremity Trauma
- Venous Trauma
- Diagnosis of Vascular Trauma - Arteriography/Duplex
- Nonoperative Therapy
- Traumatic A-V Fistulas
- Iatrogenic Vascular Trauma

Additional Important/Non-Core Curriculum Topics:

- Associated Neural Injury

Diagnoses and Management of Venous Thromboembolic Disease

Includes:

- Deep Venous Thrombosis

- Deep Venous Thrombosis Prophylaxis
- Pulmonary Emboli
- Caval Interruption Subclavian/Axillary Thrombosis
- Venous Thrombectomy/Thrombolytic Therapy
- Anticoagulation

Additional Important/Non-Core Curriculum Topics:

- Acute Caval Thrombosis Syndrome
- Pulmonary Embolectomy (open & catheter based)
- Renal Vein Thrombosis
- Budd-Chiari Syndrome

Diagnosis and Management of Chronic Venous Insufficiency

Includes:

- Noninvasive Diagnosis
- Medical Treatment
- Sclerotherapy
- Surgical Reconstruction including Sub-fascial Ligation of Perforators, Valvular
- Congenital Causes

Diagnosis and Management of Lymphedema

Indications and Techniques for Extremity Amputation

Includes:

- Determination of Amputation Level
- Additional Important/Non-Core Curriculum Topics:
- Post-Amputation Care
- Prosthetic Management
- Rehabilitation
- Phantom Pain Symptoms

Techniques for the Diagnosis of Peripheral Vascular Disease

Includes:

- Hemodynamic Assessment of Arterial and Venous Disease
- Duplex Evaluation of Carotid, Venous, Mesenteric, Renal and Extremity Vascular Disease
- Arteriography Computerized Tomography
- MRI/MRA
- Intraoperative Duplex Evaluation

Additional Important/Non-Core Curriculum Topics:

- Intravascular Ultrasound

Use of Endovascular Therapy in the Management of Peripheral Vascular Disease

Includes:

- Lytic Therapy
- Balloon Angioplasty
- Endoluminal Stents
- Stent Grafts
- Angioscopy
- Endoluminal Ultrasound
- Embolization

Risk Stratification in Patients with Peripheral Vascular Disease

Includes:

- Cardiac Risk Evaluation
- Pulmonary Risk Evaluation
- Atherosclerotic Risk Factor Assessment
- Lipid Disorder Evaluation and Management

Diagnosis and Management of Coagulation Disorders in Patients with Peripheral Vascular Disease

Includes:

- Bleeding Disorders/Intraoperative Bleeding
- Heparin Associated Thrombocytopenia
- Hypercoagulable States
- Low Molecular Weight Heparin
- Antiplatelet Agents

Diagnosis and Management of Miscellaneous Vasculogenic Problems

Includes:

- Vasospastic Diseases
- Neurogenic Thoracic Outlet Syndrome
- Causalgia/Reflex Sympathetic Dystrophy

Additional Important/Non-Core Curriculum Topics:

- Vasculogenic Impotence
- Pediatric Vascular Disorders
- Frostbite

Diagnosis and Management of Non-Atherosclerotic Vascular Diseases

Includes:

- Systemic Vacuities
  - Giant Cell Arteritis
  - Takayasu's Disease
- Radiation Induced Arterial Disease
- Arterial Infections
- Adventitial Cystic Disease Popliteal
- Entrapment Syndrome
- Burgers' Disease
- Congenital Problems
  - Coarctation
  - Persistent Sciatic Artery
  - Aberrant Subclavian Artery

- Arteriopathies
    - Marfan's Syndrome
    - Ehlers-Danlos Syndrome
    - Arterial Magna Syndrome
    - Cystic Medical Necrosis
    - Behcet's Disease
- Homocystinuria
- Intra-Arterial Drug Induced Injury

Diagnosis and Management of Arterial Venous Malformations

Includes:

- Surgical, Catheter and Nonoperative Management of Angiodysplasias

Indications for and Techniques of Vascular Access

Includes:

- Vascular Access for Hemodialysis
- Ischemic Hand After Vascular Access
- Peripheral Dialysis Access

Indications for and Results of Sympathectomy in Patients with Peripheral Vascular Disease

Diagnosis and Management of Portal Hypertension