

*This document applies to those who begin training on or after July 1<sup>st</sup>, 2014.*

## **DEFINITION**

Vascular Surgery is that branch of surgery concerned with the diagnosis and management of congenital and acquired diseases of the arterial, venous, and lymphatic circulatory systems. This is exclusive of the vessels intrinsic to the heart, and the intracranial vessels.

## **GOALS**

Upon completion of training, a resident is expected to be a competent specialist in Vascular Surgery capable of assuming a consultant's role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research.

Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centred care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to address ethical issues and issues of gender, sexual orientation, age, culture, and ethnicity in a professional manner.

## **VASCULAR SURGERY COMPETENCIES**

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

### **Medical Expert**

#### ***Definition:***

*As Medical Experts, Vascular Surgeons integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centred care. Medical Expert is the central physician Role in the CanMEDS framework.*

**Key and Enabling Competencies: Vascular Surgeons are able to...**

**1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical and patient-centred medical care**

- 1.1. Demonstrate foundational surgical competencies as described in the Objectives of Surgical Foundations Training
  - 1.2. Perform a consultation effectively, including the presentation of well-documented assessments and recommendations in written and/or oral form, in response to a request from another health care professional. The consultation will advise on diagnosis and treatment in patients with the following conditions:
    - 1.2.1. Acute and chronic visceral ischemia including but not limited to renal artery occlusive disease
    - 1.2.2. Acute arterial occlusion
    - 1.2.3. Aneurysms of the aorta and other vessels
    - 1.2.4. Aortic dissections
    - 1.2.5. Arterio-venous malformations
    - 1.2.6. Chronic lower and upper extremity arterial occlusive disease
    - 1.2.7. Chronic venous diseases
    - 1.2.8. Conditions requiring amputations
    - 1.2.9. Extracranial cerebrovascular disease
    - 1.2.10. Intrathoracic non-coronary vascular disease
    - 1.2.11. Local and systemic complications of vascular therapy
    - 1.2.12. Lymphedema
    - 1.2.13. Non-atherosclerotic vascular disease
    - 1.2.14. Thoracic outlet syndrome
    - 1.2.15. Vascular access for dialysis
    - 1.2.16. Vascular trauma
    - 1.2.17. Vasospastic disorders
    - 1.2.18. Venous thromboembolic disease
  - 1.3. Demonstrate effective use of all CanMEDS competencies relevant to Vascular Surgery
  - 1.4. Identify and appropriately respond to relevant ethical issues arising in patient care
  - 1.5. Demonstrate the ability to prioritize professional duties when faced with multiple patients and problems
  - 1.6. Demonstrate compassionate and patient-centred care
  - 1.7. Recognize and respond to the ethical dimensions in medical decision-making
  - 1.8. Demonstrate medical expertise in situations other than patient care, including but not limited to providing expert legal testimony or advising governments, as needed
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**2. Establish and maintain clinical knowledge, skills, and behaviour appropriate to Vascular Surgery practice**

- 2.1. Apply knowledge of the clinical, socio-behavioral, and fundamental biomedical sciences relevant to Vascular Surgery
  - 2.1.1. Describe the anatomy, physiology, and pathophysiology of the circulatory system in health and disease, including but not limited to:
    - 2.1.1.1. Arterial wall cell biology
    - 2.1.1.2. Hemodynamics
    - 2.1.1.3. Ischemia-related organ dysfunction
  - 2.1.2. Differentiate the pattern of disease, natural history, and response to treatment of vascular disease in men and women, and in different racial and cultural groups
  - 2.1.3. Describe the therapeutic options, including but not limited to indications, risk and benefits, for both operative and non-operative treatments available to patients with vascular disease
  - 2.1.4. Provide a strategy for risk stratification and risk factor modification in patients with vascular disease
  - 2.1.5. Describe the effect of coagulation disorders on the vascular system
  - 2.1.6. Summarize the noninvasive and invasive diagnostic modalities available, including but not limited to indications and complications
  - 2.1.7. Describe the behaviors of biological and synthetic grafts and their respective complications
  - 2.1.8. Interpret appropriate biostatistics and epidemiology measures as they relate to Vascular Surgery
  - 2.1.9. Describe the safety procedures appropriate for the use of radiation and how they relate to vascular imaging
- 2.2. Describe the CanMEDS framework of competencies relevant to the specialty of Vascular Surgery
- 2.3. Apply lifelong learning skills of the Scholar Role to implement a personal program to keep up-to-date, and enhance areas of professional competence
- 2.4. Integrate the available best evidence and best practices to enhance the quality of care and patient safety in Vascular Surgery practice

**3. Perform a complete and appropriate assessment of a Vascular Surgery patient**

- 3.1. Identify and effectively explore issues to be addressed in a patient encounter, including the patient's context and preferences

- 3.2. Elicit a history that is relevant, clear, concise, and accurate to context and preferences for the purposes of diagnosis, management, health promotion, and disease prevention
- 3.3. Perform a focused physical examination that is relevant and accurate for the purposes of diagnosis, management, health promotion, and disease prevention
- 3.4. Select medically appropriate investigative methods in a resource-effective and ethical manner
- 3.5. Demonstrate effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans

**4. Use preventive and therapeutic interventions effectively**

- 4.1. Implement a management plan in collaboration with a patient and the patient's family
- 4.2. Demonstrate appropriate and timely application of preventive and therapeutic interventions relevant to the practice of Vascular Surgery including but not limited to risk factor modification
- 4.3. Ensure appropriate informed consent is obtained for therapies
- 4.4. Ensure patients receive appropriate end-of-life care by applying therapies to support the provision of palliative care

**5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic**

- 5.1. Demonstrate effective, appropriate, and timely performance of diagnostic procedures relevant to Vascular Surgery
  - 5.1.1. Application and interpretation of invasive imaging modalities, including but not limited to venography and angiography
  - 5.1.2. Application and interpretation of noninvasive imaging modalities, including but not limited to computed tomography [CT] scan, magnetic resonance [MR] imaging, and ultrasound
- 5.2. Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to Vascular Surgery practice, including the safe and competent performance of the following interventions:
  - 5.2.1. Amputation/fasciotomy
  - 5.2.2. Aortic reconstruction
  - 5.2.3. Arterial exposure and control
  - 5.2.4. Carotid surgery including endarterectomy
  - 5.2.5. Endovascular interventions including but not limited to angioplasty, thrombosis treatments, reconstruction and vessel occlusion
  - 5.2.6. Interventions for acute ischemia

- 5.2.7. Lower extremity arterial reconstruction
  - 5.2.8. Mesenteric artery and renal artery reconstruction
  - 5.2.9. Repair of aortic aneurysms:
    - 5.2.9.1. Elective – endovascular
    - 5.2.9.2. Elective – open
    - 5.2.9.3. Ruptured aortic aneurysms
  - 5.2.10. Repair of peripheral and visceral aneurysms
  - 5.2.11. Repair of vascular trauma
  - 5.2.12. Surgery for thoracic outlet syndrome
  - 5.2.13. Upper extremity vascular reconstruction
  - 5.2.14. Vascular access surgery
  - 5.2.15. Venous procedures including but not limited to treatment of acute and chronic venous disease
- 5.3. Apply knowledge and skills in the application of endovascular interventions, and other treatment modalities
- 5.3.1. Endovascular aortic aneurysm repair (abdominal and thoracic)
  - 5.3.2. Balloon angioplasty and stenting
  - 5.3.3. Arterial embolization
  - 5.3.4. Venous ablation techniques
- 5.4. Ensure informed consent is obtained for procedures
- 5.5. Document and disseminate information related to procedures performed and their outcomes over the short and long term
- 5.6. Ensure adequate followup is arranged for procedures performed
- 6. Seek appropriate consultation from other health professionals, recognizing the limits of their own expertise**
- 6.1. Demonstrate insight into their own limits of expertise
  - 6.2. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care
  - 6.3. Arrange appropriate followup care services for patients and their families/caregivers

## Communicator

### **Definition:**

As *Communicators*, Vascular Surgeons effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

### **Key and Enabling Competencies: Vascular Surgeons are able to...**

#### **1. Develop rapport, trust, and ethical therapeutic relationships with patients and families**

- 1.1. Recognize that being a good communicator is a core clinical skill for Vascular Surgeons, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes
- 1.2. Establish positive therapeutic relationships with patients and their families that are characterized by understanding, trust, respect, honesty and empathy
- 1.3. Respect patient confidentiality, privacy, and autonomy
- 1.4. Listen effectively and respond to patients' needs
- 1.5. Be aware of and responsive to nonverbal cues
- 1.6. Facilitate a structured clinical encounter effectively

#### **2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals**

- 2.1. Gather information about a disease and about a patient's beliefs, concerns, expectations and illness experience
- 2.2. Seek out and synthesize relevant information from other sources, including but not limited to a patient's family, caregivers and other professionals

#### **3. Convey relevant information and explanations accurately to patients and families, colleagues and other professionals**

- 3.1. Deliver information to a patient and family, colleagues and other professionals in a humane manner and in such a way that it is understandable, and encourages discussion and participation in decision-making

#### **4. Develop a common understanding on issues, problems and plans with patients, families, and other professionals to develop a shared plan of care**

- 4.1. Identify and explore problems to be addressed from a patient encounter effectively, including the patient's context, responses, concerns, and preferences
- 4.2. Respect diversity and differences, including but not limited to the impact of gender, religion and cultural beliefs on decision-making

- 4.3. Encourage discussion, questions, and interaction in the encounter from individuals in the decision-making process
- 4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care
- 4.5. Address challenging communication issues effectively, including but not limited to obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding
- 4.6. Discuss with patients their wishes related to unexpected and critical complications of vascular disease, including but not limited to aneurysm rupture and need for limb amputation
- 4.7. Demonstrate an understanding of a patient's wishes related to end-of-life care
- 4.8. Recognize the importance of and practice appropriate physician to physician communication for effective patient care

**5. Convey effective oral and written information about a medical encounter**

- 5.1. Maintain clear, concise, accurate, and appropriate records (e.g., written or electronic) of clinical encounters and plans
- 5.2. Present oral reports of clinical encounters and plans
- 5.3. Convey medical information appropriately to ensure safe transfer of care
- 5.4. Present medical information effectively to the public or media about a medical issue

**Collaborator**

**Definition:**

As *Collaborators*, Vascular Surgeons effectively work within a health care team to achieve optimal patient care.

**Key and Enabling Competencies: Vascular Surgeons are able to...**

**1. Participate effectively and appropriately in an interprofessional Vascular Surgery team**

- 1.1. Describe the Vascular Surgeon's roles and responsibilities to other professionals
- 1.2. Describe the roles and responsibilities of other professionals within the Vascular Surgery care team including but not limited to nurses, physiotherapists, vascular technologists, social workers and others with a specific interest in vascular disease
- 1.3. Recognize and respect the diversity of roles, responsibilities and competencies of other professionals in relation to their own
- 1.4. Work with others to assess, plan, provide and integrate care for individuals and groups of patients

- 1.5. Work with others to assess, plan, provide and review other tasks, including but not limited to research, educational work, program review or administrative responsibilities
- 1.6. Participate in interprofessional team meetings
- 1.7. Enter into interdependent relationships with other professions for the provision of quality care
- 1.8. Describe the principles of team dynamics
- 1.9. Respect team ethics, including confidentiality, resource allocation and professionalism
- 1.10. Demonstrate leadership in a health care team, as appropriate

**2. Work with other health professionals effectively to prevent, negotiate, and resolve interprofessional conflict**

- 2.1. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team
- 2.2. Work with other professionals to prevent conflicts
- 2.3. Employ collaborative negotiation to resolve conflicts
- 2.4. Respect differences and address misunderstandings and limits of scope of practice in other professions
- 2.5. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension
- 2.6. Reflect on interprofessional team function

**Manager**

***Definition:***

As *Managers*, Vascular Surgeons are integral participants in health care organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the health care system.

***Key and Enabling Competencies: Vascular Surgeons are able to...***

**1. Participate in activities that contribute to the effectiveness of their health care organizations and systems**

- 1.1. Work collaboratively with others in their organizations
- 1.2. Participate in systemic quality process evaluation and improvement, including patient safety initiatives
- 1.3. Describe the structure and function of the health care system as it relates to Vascular Surgery, including the roles of physicians



- 1.4. Describe principles of health care financing, including physician remuneration, budgeting and organizational funding
- 1.5. Describe the resources necessary for an effective Vascular Surgery practice including but not limited to physician staff and appropriate technology to provide complete care of patients with vascular disease

## **2. Manage their practice and career effectively**

- 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities and personal life
- 2.2. Manage a Vascular Surgery practice including finances, human resources and, where applicable, educational priorities
- 2.3. Implement processes to ensure personal practice improvement
- 2.4. Employ information technology appropriately for patient care and lifelong learning

## **3. Allocate finite health care resources appropriately**

- 3.1. Recognize the importance of just allocation of health care resources, balancing effectiveness, efficiency and access with optimal patient care
- 3.2. Apply evidence and management processes for cost-appropriate care
- 3.3. Prioritize waiting lists effectively to meet the needs of their community of practice

## **4. Serve in administration and leadership roles**

- 4.1. Chair or participate effectively in committees and meetings
- 4.2. Lead or implement change in health care
- 4.3. Plan relevant elements of health care delivery to make efficient use of time and personnel

## **Health Advocate**

### ***Definition:***

As *Health Advocates*, Vascular Surgeons responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.

### ***Key and Enabling Competencies: Vascular Surgeons are able to...***

#### **1. Respond to individual patient health needs and issues as part of patient care**

- 1.1. Identify the health needs of an individual patient

- 1.2. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care, including but not limited to:
    - 1.2.1. Smoking cessation programs
    - 1.2.2. Lipid management strategies
    - 1.2.3. Diabetes management and prevention
  - 1.3. Manage factors as they affect the overall health of vascular patients
  - 1.4. Advocate for the timely delivery of care to the vascular patient
  - 1.5. Demonstrate an appreciation of the possibility of competing interests between individual advocacy issues and the community at large
- 2. Respond to the health needs of the communities that Vascular Surgery serve**
- 2.1. Describe the practice communities that they serve
  - 2.2. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately
  - 2.3. Appreciate the possibility of competing interests between the communities served and other populations
- 3. Identify the determinants of health for the populations that they serve**
- 3.1. Identify the determinants of health of the population, including barriers to access to care, and resources
  - 3.2. Identify vulnerable or marginalized populations within those served and respond appropriately
    - 3.2.1. Identify strategies to improve the care of patients with renal failure related to their vascular access needs
    - 3.2.2. Identify strategies to improve the vascular care of the frail elderly, including minimally invasive procedures
- 4. Promote the health of individual patients, communities, and populations**
- 4.1. Describe an approach to implementing a change in a determinant of health of the populations they serve
  - 4.2. Describe how public policy impacts on the health of the populations served
  - 4.3. Advocate for the management of risk factors in vascular patients with a multi-system disease
  - 4.4. Identify points of influence in the health care system and its structure
  - 4.5. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism
  - 4.6. Demonstrate an appreciation of the possibility of conflict inherent in their role as a health advocate for a patient or community with that of their role as a manager of

health resources

- 4.7. Describe the role of the medical profession in advocating collectively for health and patient safety

## Scholar

### **Definition:**

As *Scholars*, Vascular Surgeons demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

### **Key and Enabling Competencies: Vascular Surgeons are able to...**

#### **1. Maintain and enhance professional activities through ongoing learning**

- 1.1. Describe the principles of maintenance of competence
- 1.2. Describe the principles and strategies for implementing a personal knowledge management system
- 1.3. Recognize and reflect on learning issues in practice
- 1.4. Conduct personal practice audits
- 1.5. Pose an appropriate learning question
- 1.6. Access and interpret the relevant evidence
- 1.7. Integrate new learning into practice
- 1.8. Evaluate the impact of any change in practice
- 1.9. Document the learning process
- 1.10. Evaluate and adopt as appropriate emerging technologies
- 1.11. Participate in learning activities and meetings
- 1.12. Develop a strategy to maintain an up to date evidence based practice considering that diagnostic and therapeutic modalities will change throughout the practice career of Vascular Surgeons

#### **2. Critically evaluate medical information and its sources, and apply this appropriately to practice decisions**

- 2.1. Describe the principles of critical appraisal
- 2.2. Critically appraise retrieved evidence in order to address a clinical question
- 2.3. Integrate critical appraisal conclusions into clinical care
- 2.4. Identify appropriate use of biostatistics as it applies to clinical research and reviews related to Vascular Surgery

- 2.5. Incorporate new information technologies appropriately into the practice of Vascular Surgery

**3. Facilitate the learning of patients, families, students, residents, other health professionals, the public and others, as appropriate**

- 3.1. Describe principles of learning relevant to medical education
- 3.2. Identify collaboratively the learning needs and desired learning outcomes of others
- 3.3. Select effective teaching strategies and content to facilitate others' learning
- 3.4. Deliver effective lectures or presentations
- 3.5. Assess and reflect on teaching encounters
- 3.6. Provide effective feedback
- 3.7. Describe the principles of ethics with respect to teaching
- 3.8. Advocate for the educational needs of learners in Vascular Surgery

**4. Contribute to the development, dissemination, and translation of new knowledge and practices**

- 4.1. Describe the principles of research and scholarly inquiry
- 4.2. Describe the principles of research ethics
- 4.3. Pose a scholarly question
- 4.4. Conduct a systematic search for evidence
- 4.5. Select and apply appropriate methods to address the question
- 4.6. Disseminate the findings of a study
- 4.7. Participate in a scholarly research, quality assurance, or educational project relevant to Vascular Surgery demonstrating primary responsibility for at least one of the following elements of the project:
  - 4.7.1. Development of the hypothesis, which must include a comprehensive literature review
  - 4.7.2. Development of the protocol for the scholarly project
  - 4.7.3. Preparation of a grant application
  - 4.7.4. Development of the research ethics proposal
  - 4.7.5. Interpretation and synthesis of the results

## Professional

### **Definition:**

As *Professionals*, Vascular Surgeons are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.

### **Key and Enabling Competencies: Vascular Surgeons are able to...**

#### **1. Demonstrate a commitment to their patients, profession, and society through ethical practice**

- 1.1. Exhibit appropriate professional behaviours in practice, including honesty, integrity, commitment, compassion, respect, and altruism
  - 1.1.1. Demonstrate appropriate professional behaviours in all clinical and administrative settings including but not limited to the operating room, clinic, wards, and the learning environment
- 1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence
- 1.3. Recognize and appropriately respond to ethical issues encountered in practice
- 1.4. Recognize and manage real or perceived conflicts of interest
- 1.5. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law
- 1.6. Maintain appropriate boundaries with patients

#### **2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation**

- 2.1. Demonstrate knowledge and understanding of professional, legal and ethical codes of practice
- 2.2. Fulfil the regulatory and legal obligations required of current practice
  - 2.2.1. Abide by accepted guidelines on ethical interactions with industry, including but not limited to the pharmaceutical industry, with respect to research, education, and clinical care
- 2.3. Demonstrate accountability to professional regulatory bodies
- 2.4. Recognize and respond to others' unprofessional behaviours in practice
- 2.5. Participate in peer review

**3. Demonstrate a commitment to physician health and sustainable practice**

- 3.1. Balance personal and professional priorities to ensure personal health and a sustainable practice
- 3.2. Strive to heighten personal and professional awareness and insight
- 3.3. Recognize other professionals in need and respond appropriately

**REVISED** – Specialty Standards Review Committee – December 2008

**REVISED** – Specialty Standards Review Committee – January 2011

**REVISED** – Specialty Standards Review Committee – October 2013