

Ontario Designated Vascular Program Standards

Roles and Responsibilities,
Annual Volumes, and
Infrastructure Requirements

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Ontario Health
CorHealth Ontario

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About Ontario Health – CorHealth Ontario

Ontario Health - CorHealth Ontario is the Ontario government’s principal advisor on cardiac, stroke and vascular services and drives improvement in access, quality, efficiency, and equity of care in these clinical domains for patients across Ontario. As of December 1, 2021, CorHealth Ontario is now part of Ontario Health, which is an agency of the Ministry of Health responsible for the administration of Ontario’s healthcare system and integrating services and supports among various health providers or related agencies. Ontario Health – CorHealth Ontario’s approach to supporting healthcare system transformation is grounded in evidence-informed best practice and includes working with key partners to obtain understanding of care needs of both patients and providers, enable provincial planning, advise on resource allocation, use data and performance measurement to inform decision-making, and drive clinical quality and system improvements for optimized patient outcomes.

Purpose

The Ontario Designated Vascular Program Standards (Program Standards) were developed by Ontario Health – CorHealth Ontario in collaboration with vascular care partners. The Program Standards define the expectations and requirements of a hospital with a designated Level 1, 2, or 3 vascular program including:

1. Roles and responsibilities;
2. Annual volumes; and
3. Infrastructure.

The Program Standards provide guidance to vascular care providers and leaders within designated vascular programs to support standardized and timely access to vascular care for patients across Ontario, including life and limb saving care. These Program Standards also create designated vascular program accountability to Ontario Health – CorHealth Ontario and the Ontario health care system. Vascular care includes care provided by both vascular surgery and interventional radiology, which should be provided through a collaborative interprofessional team-based approach. A high degree of multidisciplinary and interprofessional collaboration with other relevant clinical programs in the hospital will support vascular program success. The Program Standards lay the foundation for continuous quality improvement to achieve positive patient outcomes.

The Program Standards align with and support the concept of integrated regional care by ensuring designated vascular programs have a regional approach to provision of vascular care services in collaboration with their Ontario Health Region. Designated vascular programs are expected to coordinate and integrate vascular care services within their hospital and with community partners. Vascular programs are also encouraged to collaborate with other vascular programs within and across Ontario Health Regions to help inform and develop standardized approaches (where applicable) to ensure that all Ontarians have equitable access to vascular care services.

Accountability

Ontario Health – CorHealth Ontario requires all designated vascular programs to comply with all the Program Standards detailed within this document that align with their designation as a Level 1, 2, or 3 vascular program. A collaborative Vascular Quality Engagement Process will be undertaken with all designated vascular programs to learn and share successes, and to support any vascular program that may not meet requirements to better understand the issue and potential root cause(s), and to develop a plan to support action and improvement. A summary of the Vascular Quality Engagement Process can be found in Figure 1. The Process includes acknowledgement by each hospital to confirm fulfillment of the roles and responsibilities, annual volumes, and infrastructure requirements that align with designation as a Level 1, 2, or 3 vascular program. It is the responsibility of the hospital Chief Executive Officer (CEO) or designate to complete the Checklist (found in Appendix B) and sign the Acknowledgement Letter (found in Appendix C).

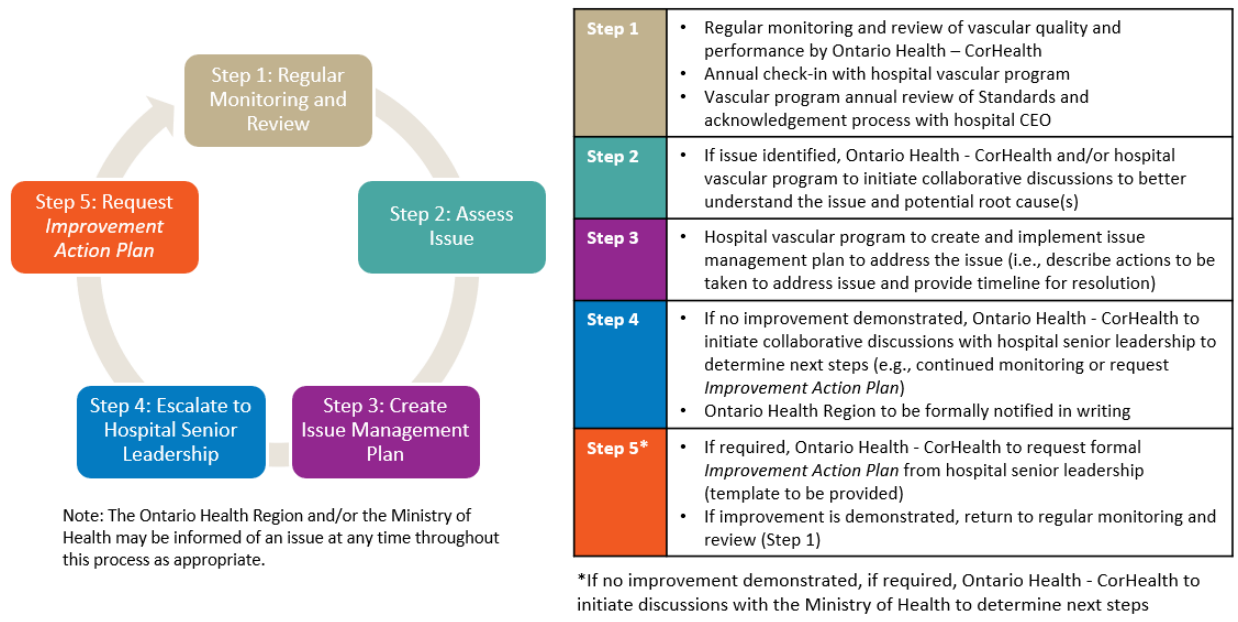


Figure 1: Vascular Quality Engagement Process

A designated vascular program that does not achieve or maintain the expectations and requirements associated with their vascular program Level designation will be expected to collaboratively engage, as required, with Ontario Health and their Ontario Health Region, and with the Ministry of Health, to develop and implement an Improvement Action Plan to achieve fulfilment of the Program Standards. Should the Program Standards not be achieved within a reasonable timeframe, alternative solutions will be explored including, but not limited to, adjusting the vascular program’s Level designation and/or adjusting Non-Cardiac Vascular Quality-Based Procedure (NCV QBP) funding.

Hospitals that do not have a designated vascular program, but are performing vascular procedures and receiving NCV QBP funding, are encouraged to submit a proposal, through the established Ontario Health - CorHealth Ontario process, for vascular program designation in alignment with the Program Standards or create a partnership through a Memorandum of Understanding with a designated vascular program. Should these options not be achieved within a reasonable timeframe, alternative solutions will be explored including, but not limited to, adjusting NCV QBP funding.

Hospitals that do not have a designated vascular program and do not receive NCV QBP funding must submit a proposal through the established Ontario Health – CorHealth Ontario process for vascular program designation and only if approved can be considered for NCV QBP funding.

Vascular Program Levels

Each designated vascular program is expected to coordinate and deliver a comprehensive range of vascular care services to patients. The Program Standards define Level 1, 2, and 3 vascular programs and outline the roles and responsibilities, annual volumes, and infrastructure requirements for each Level. Each Level builds on a baseline of vascular care services (Level 3), and increases in the complexity of vascular care provided, where a Level 1 program provides the most comprehensive and complex array of vascular care.

Level 3 Vascular Program Description

A Level 3 vascular program provides the full continuum of vascular care including a baseline of vascular interventions that include open surgical repair of abdominal aortic aneurysms (AAAs), carotid endarterectomy (CEA), and lower extremity revascularization (LER) by either open surgical and/or endovascular approach. Care is provided by a core specialized vascular care team, including both vascular surgery and interventional radiology, with expertise and demonstrated competence in the care of vascular patients. The team is available for vascular emergency call services 24 hours a day, 7 days a week to ensure patients with urgent/emergent vascular care needs receive timely access. Gaps in call coverage are not permitted.

Level 2 Vascular Program Description

Building on the requirements of a Level 3 program, a Level 2 vascular program provides increasingly complex procedures including endovascular aneurysm repair (EVAR)¹. The program has a dedicated in-patient unit for the care of vascular patients and should have a specialized advanced practice clinician (e.g., vascular nurse practitioner/physician assistant) on the care team. Some Level 2 programs may provide fenestrated EVAR procedures for juxtarenal abdominal aortic aneurysms (AAA) and must meet a minimum annual volume to provide this service. Some Level 2 programs may also provide thoracic EVAR (TEVAR) procedures and must have the ability to provide appropriate cerebrospinal fluid drainage as necessary.

Level 1 Vascular Program Description

Building on the requirements of a Level 2 vascular program, a Level 1 vascular program provides comprehensive management of complex aortic disease involving the thoracoabdominal aorta and aortic arch in collaboration with a cardiac surgery program. Level 1 programs can provide the full spectrum of open surgical and endovascular interventions for all levels of aortic intervention.

A map and table of designated vascular programs by Ontario Health Region can be found [here](#).

¹ As per the QBP Volume Management Instructions, only those hospitals that have received written approval from the Ministry can use QBP funding for EVAR procedures. This approval is contingent on a hospital's designation as a Level 1 or Level 2 vascular program.

Ontario Designated Vascular Program Requirements

Outlined below are the requirements of a hospital with a designated Level 1, 2, or 3 vascular program, including:

1. Roles and responsibilities;
2. Annual volumes; and
3. Infrastructure.

To achieve and maintain designation as a Level 1, 2, or 3 vascular program, an Ontario hospital must fulfill all the requirements associated with the desired Level.

A summary of the requirements for each Level can be found in Figure 2 below. Additionally, to support vascular programs in their annual review and acknowledgement process, a table summary of the requirements, including a checklist, can be found in Appendix B.

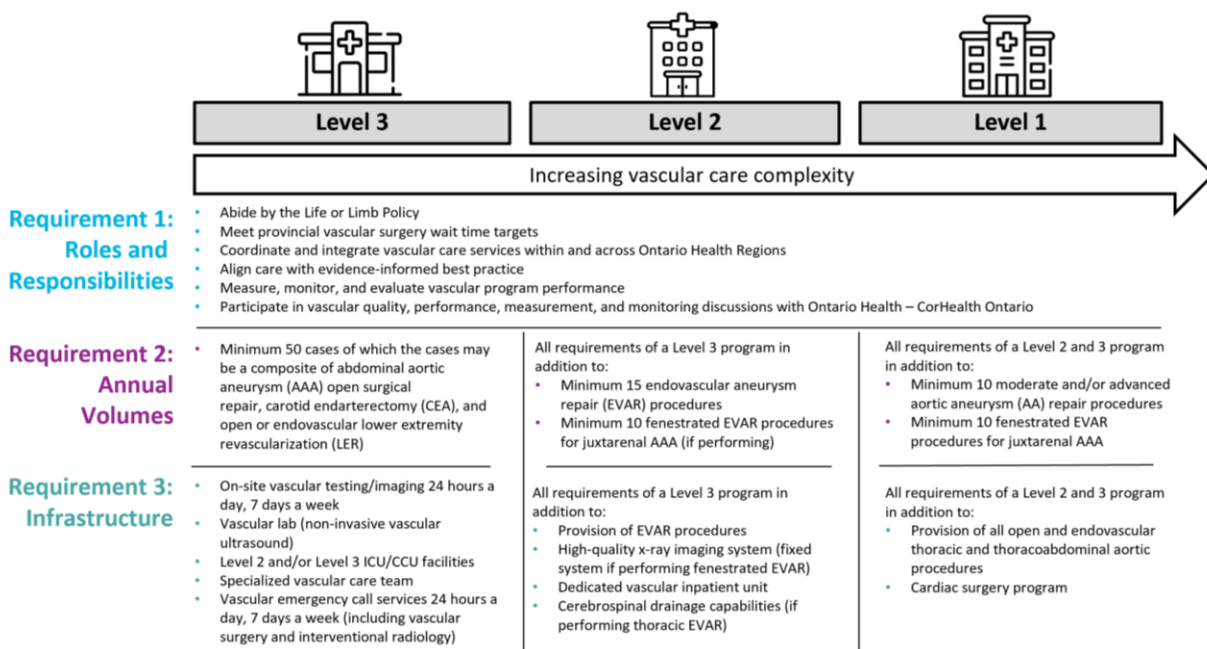


Figure 2: Ontario Designated Vascular Program Levels and Requirements

Requirement 1: Roles and Responsibilities

A designated vascular program must provide the full continuum of vascular care including diagnosis, treatment, surgical intervention, rehabilitation, and disease management.

To ensure patients across Ontario receive timely access to care, each program must make all reasonable efforts to:

- Abide by the Ontario Life or Limb Policy to ensure that appropriate and timely acute care services are available, within a best effort window of four (4) hours, to vascular patients, notified through CritiCall, who are deemed life or limb threatened.
 - No patient with a life or limb threatened condition can be refused care (either consultation or transfer);
 - Hospitals are required to have a dedicated pathway for life or limb patients accepted through CritiCall to ensure immediate clinical assessment, surgical/endovascular intervention, and post-procedure recovery without delay; and
 - Hospitals are required to have internal processes in place to follow-up on any deviation from the Policy.
- Ensure patients with vascular care needs receive timely access to diagnostic testing and treatment based on urgency and provincial vascular surgery wait time targets.

Additionally, a designated vascular program is responsible for:

- Participating in the regional coordination and integration of vascular care services within and across Ontario Health Regions to meet patient needs, in collaboration with other vascular programs, the Ministry of Health (MOH), Ontario Health Regions, and Ontario Health – CorHealth Ontario.
- Aligning vascular care services with evidence-informed best practice, including provincial guidelines and standards.
- Independently measuring, monitoring, and evaluating vascular program performance through an internal continuous quality improvement program that incorporates:
 - A regular review of mortality and morbidity including avoidable amputations;
 - Regular case conference rounds to discuss challenging, complex, or rare cases that may benefit from multidisciplinary team input; and
 - Participation in a quality database such as the Ontario collaborative of the National Surgical Quality Improvement Program (NSQIP-ON) and Ontario Surgical Quality Improvement Network (ON-SQIN) or the Canadian Vascular Quality Initiative (CVQI) (strongly recommended).
- Actively participating in additional external vascular quality, performance, measurement, and monitoring discussions with Ontario Health – CorHealth Ontario to review patient outcomes and determine strategies to drive vascular quality improvement.

Requirement 2: Annual Volumes

Annual Volumes

Description

Level 1, 2, and 3 vascular programs must perform a minimum of 50 cases of which the cases may be a composite of standard* abdominal aortic aneurysm (AAA) open surgical repair, carotid endarterectomy (CEA), and open or endovascular lower extremity revascularization (LER).

Level 1 and 2 vascular programs must meet the minimum volume requirements for AA repair which include ≥ 15 endovascular aortic aneurysm repair (EVAR) procedures. Only Level 1 and 2 vascular programs are permitted to perform EVAR at this time. Level 3 and non-designated vascular programs are not permitted to perform EVAR.

Level 1, and any Level 2 program that performs fenestrated EVAR for juxtarenal AAA, must perform ≥ 10 fenestrated EVAR procedures.

Level 1 vascular programs must perform ≥ 10 moderate* and/or advanced* AA repair procedures and must be able to provide advanced* AA repair by both open surgical repair and EVAR.

*See Appendix D for the Quality-Based Procedure (QBP) Definitions for Standard, Moderate, and Advanced Aortic Aneurysm Repairs

Requirement 3: Infrastructure

1. Vascular testing/imaging

Description

All vascular programs must have on-site vascular testing/imaging available 24 hours a day, 7 days a week. Key modalities must include:

- Computed Tomography Angiography (CTA)
- Multi-slice CT imaging
- Magnetic Resonance Angiogram (MRA)
- Peripheral Angiography

All vascular programs must also have an on-site vascular lab that provides non-invasive vascular ultrasound imaging. Vascular ultrasound is not required to be available 24 hours a day, 7 days a week, but should be available on most weekdays. The vascular lab must provide a full range of arterial and venous imaging and have standard protocols and a quality assurance program in place.

It is strongly recommended that vascular ultrasound imaging is:

- Performed by a Registered Vascular Technologist or equivalent; and
- Interpreted by a physician familiar with vascular pathologies, ideally with Registered Physician in Vascular Interpretation (RPVI) certification or equivalent.

In addition, vascular-specific protocols should be in place for lower limb, pelvic, infrarenal, thoracic, and thoracoabdominal procedures.

2. Procedure/operating suite with a high-quality x-ray imaging system

Description

All vascular programs must have a procedure/operating suite for vascular procedures to provide a safe, appropriate environment to allow for induction of anesthesia, surgical cut-down or percutaneous access, post-operative recovery, and conversion to open repair, should the need arise.

At minimum, Level 1 and 2 vascular programs must have access to a procedure/operating suite with a portable high-quality x-ray imaging system (C-arm) available.

Level 1 and 2 vascular programs performing fenestrated EVAR procedures, and Level 1 programs performing branched EVAR procedures, must have a fixed imaging system.

3. Intensive Care Unit (ICU)/Critical Care Unit (CCU) facilities

Description

All vascular programs must have Level 2 and/or Level 3 ICU/CCU facilities.

4. Dedicated inpatient unit for management of vascular patients

Description

Level 1 and 2 vascular programs must have a dedicated inpatient unit where clinical teams have demonstrated competence in the management of post-surgical and post-interventional vascular patients.

5. Consumable EVAR supplies

Description

Level 1 and 2 vascular programs must maintain an appropriate inventory of consumable supplies that are immediately available to support the ability to provide emergency EVAR services should the need arise.

6. Specialized vascular care team

Description

All vascular programs must have a core specialized vascular care team with expertise and demonstrated competence in the management of vascular patients. At a minimum, the core team must include but is not limited to:

- Vascular Surgeons
- Interventional Radiologists
- Vascular-trained Anesthetists
- Vascular-trained operating room (OR) Nurses
- Nurses experienced with post-surgical/post-interventional care of vascular patients

Level 1 and 2 programs should have a specialized advanced practice clinician (e.g., vascular nurse practitioner/physician assistant).

7. Vascular emergency call services available 24 hours a day, 7 days a week

Description

All vascular programs must have vascular emergency call services (including vascular surgery and interventional radiology) available 24 hours a day, 7 days a week, either stand-alone (on-site) or in coordinated partnership with other local vascular programs, with the necessary health human resources in place for support. If vascular emergency call services are offered in coordinated partnership with other local vascular programs, an executed Memorandum of Understanding should be in place to formalize the process.

In situations where there is unforeseen disruption to vascular care services, it is the responsibility of the hospital to coordinate coverage with other vascular programs to ensure patient access to vascular care 24 hours a day, 7 days a week.

8. Anesthesia services

Description

Anesthesia for all patients undergoing major vascular surgery, including EVAR, must be provided by an anesthesiologist with experience in vascular anesthesia. The provision of EVAR without an anesthesiologist is not permitted at this time.

9. Access to inpatient hemodialysis

Description

All vascular programs must have access to inpatient hemodialysis for post-operative dialysis support.

10. Cerebrospinal fluid (CSF) drainage capabilities

Description

As part of an EVAR program, vascular programs that perform thoracic/thoracoabdominal EVAR procedures must have the ability to provide appropriate CSF drainage as necessary and have CSF drainage protocols in place as they relate to thoracic/thoracoabdominal EVAR services.

11. Cardiac surgery program

Description

All Level 1 vascular programs must have a hospital cardiac surgery program (or partnership) to provide comprehensive management of complex aortic disease involving the aortic root, ascending aorta, and aortic arch.

Appendix A: Background

In 2012, with the active participation and support of vascular service providers and other health system partners, the then Cardiac Care Network of Ontario (CCN) developed a provincial strategy aimed at increasing equitable access to standardized best-practice vascular care and improving vascular health outcomes for Ontarians. The vascular strategy presented ten recommendations for implementation including:

- Development of a provincial vascular program framework for regionalized and coordinated vascular services to address the gap in disease management and quality assurance in vascular care in Ontario; and
- Adequate vascular emergency coverage including regional on-call networks available 24 hours a day, 7 days a week.

A Vascular Care Working Group was established in 2013 and began to define an evidence-informed and consensus-based framework for the provision of standardized vascular services in Ontario. Through this process it became apparent that a comprehensive understanding of the current vascular services infrastructure and capacity landscape in Ontario was required. As such, a vascular services survey was administered to all acute care hospital corporations in Ontario to identify the hospitals and physician specialties providing vascular services, highlight current practices, and identify gaps. Utilizing survey results along with available administrative data, published literature, guidelines, examples from other jurisdictions, and consensus opinion, a proposed program framework was developed that defined three distinct levels of hospital-based vascular programs (Level 1, 2, and 3). The framework leveraged clinical expertise and infrastructure, and with a focus on program competencies, clinical standards, access, and quality of care, enabled the establishment of a provincial vascular program.

In 2016, using the *Ontario Current State Assessment and Proposed Program Framework: Acute Care Vascular Services*² as the guide, CorHealth Ontario engaged hospitals in an assessment and evaluation process, resulting in Level 1, 2, or 3 designations to acute care vascular programs across the province.

In 2019, through ongoing engagement with vascular partners, a need was identified to refresh the designated vascular program levels to determine capacity, coverage, expertise, and resources. The core service criteria were updated and streamlined to reflect the essential information required to confirm designation and differentiation of Level 1, 2, and 3 vascular programs. Each designated vascular program in the province completed a Core Service Criteria Evaluation Tool to confirm fulfillment of the criteria.

As part of an ongoing process of vascular system monitoring and evaluation, these Program Standards provide consistent clarity of the requirements for Level 1, 2, and 3 vascular programs in Ontario. Hospitals with designated vascular programs play a fundamental role in ensuring equitable access to high-quality vascular care services to support timely access to life and limb saving care for vascular patients. An Ontario hospital must fulfill all the requirements associated with the desired Level to achieve and maintain designation as a Level 1, 2, or 3 vascular program.

² Ontario Current State Assessment and Proposed Program Framework: Acute Care Vascular Services, Cardiac Care Network, August 2015
<https://www.corhealthontario.ca/resources-for-healthcare-planners-&-providers/vascular-health-general/CCN-Vascular-Services-Curent-State-Assessment-&-Proposed-Program-Framework-2015.pdf>

Appendix B: Designated Vascular Program Requirements Checklist

Designated Vascular Program Requirements Checklist				
Requirement 1: Roles and Responsibilities	Level 1	Level 2	Level 3	Confirmation of Fulfillment
Abide by the Ontario Life or Limb Policy	✓	✓	✓	
Have a dedicated pathway for acceptance of life or limb patients (including assessment, intervention, and recovery)	✓	✓	✓	
Have internal processes to follow-up on any deviation from the Life or Limb Policy	✓	✓	✓	
Ensure patients with vascular care needs receive timely access to diagnostic testing and treatment based on urgency and provincial vascular surgery wait time targets	✓	✓	✓	
Participate in the regional coordination and integration of vascular care services within and across Ontario Health Regions to meet patient needs	✓	✓	✓	
Align vascular care services with evidence-informed best practice, including provincial guidelines and standards	✓	✓	✓	
Independently measure, monitor, and evaluate vascular program performance through an internal continuous quality improvement program	✓	✓	✓	
Actively participate in external vascular quality, performance, measurement, and monitoring discussions with Ontario Health – CorHealth Ontario	✓	✓	✓	
Requirement 2: Annual Volumes	Level 1	Level 2	Level 3	Confirmation of Fulfillment
Minimum of 50 cases of which the cases may be a composite of standard abdominal aortic aneurysm (AAA) open surgical repair, carotid endarterectomy (CEA), and open or endovascular lower extremity revascularization (LER)	✓	✓	✓	
Minimum 15 endovascular aneurysm repair (EVAR) procedures	✓	✓		
Minimum 10 fenestrated EVAR procedures for juxtarenal AAA	✓			
Minimum 10 fenestrated EVAR procedures for juxtarenal AAA if performing		✓		
Minimum 10 moderate and/or advanced aortic aneurysm (AA) repair procedures	✓			
Provision of advanced AA repair by both open surgical repair and EVAR	✓			
Requirement 3: Infrastructure	Level 1	Level 2	Level 3	Confirmation of Fulfillment
On-site vascular testing/imaging available 24 hours a day, 7 days a week	✓	✓	✓	
On-site vascular lab that provides non-invasive vascular ultrasound imaging	✓	✓	✓	
Procedure/operating suite for vascular procedures	✓	✓	✓	
High-quality x-ray imaging system	✓	✓		
Fixed imaging system if performing fenestrated EVAR procedures	✓	✓		

Fixed imaging system if performing branched EVAR procedures	✓			
Level 2 and/or Level 3 ICU/CCU facilities	✓	✓	✓	
Dedicated inpatient unit for management of vascular patients	✓	✓		
Appropriate inventory of consumable EVAR supplies that are immediately available	✓	✓		
Core specialized vascular care team with expertise and demonstrated competence in the management of vascular patients	✓	✓	✓	
Vascular emergency call services available 24 hours a day, 7 days a week, either stand-alone or in coordinated partnership with other local vascular programs	✓	✓	✓	
Anesthesia provided by an anesthesiologist with vascular experience	✓	✓	✓	
Access to inpatient hemodialysis for post-operative dialysis support	✓	✓	✓	
Cerebrospinal fluid (CSF) drainage capabilities if performing thoracic/thoracoabdominal EVAR procedures	✓	✓		
Cardiac surgery program or partnership	✓			

Appendix C: Acknowledgement Letter

Ontario Designated Vascular Program Standards Acknowledgement Letter

Hospital Chief Executive Officer (CEO) or Designate Acknowledgement

This Acknowledgement Letter is to confirm vascular program fulfillment related to the roles and responsibilities, annual volumes, and infrastructure requirements within the Ontario Designated Vascular Program Standards (Program Standards). It is the responsibility of the Hospital Chief Executive Officer (CEO) or designate to complete this acknowledgement.

Having reviewed the Program Standards with clinical and administrative vascular leaders, I hereby acknowledge that the hospital's designated vascular program meets the requirements as outlined in the Program Standards. I also acknowledge the hospital is committed through engaged leadership to support the vascular program by ensuring a strong focus on continuous quality improvement to achieve positive patient outcomes.

Date:

Name of Hospital:

Hospital Address:

Designated Vascular Program Level:

Name of Hospital CEO or designate:

Signature:

Appendix D: Quality-Based Procedure (QBP) Definitions for Standard, Moderate, and Advanced Aortic Aneurysm Repairs

Standard aortic aneurysm repairs involve the infrarenal aortoiliac segment (abdominal aortic aneurysm) and can be identified by:

- a) use of a clamp below the renal arteries during open repair; or
- b) use of a standard (non-fenestrated) endograft for endovascular aneurysm repair (EVAR).

Moderate aortic aneurysm repairs include:

- a) Aortoiliac - Abdominal and iliac aneurysms that require iliac branched devices for repair with or without iliac femoral bypass or aortofemoral bypass; or
- b) Juxtarenal - Juxtarenal aortic aneurysm repair can be identified by:
 - a. use of a clamp above the renal arteries during open repair; or
 - b. use of a fenestrated endovascular graft for EVAR; or
- c) Thoracic – Aneurysms that are in the descending thoracic aorta.

Advanced aneurysm repairs include those requiring advanced open or branched endovascular techniques and perioperative care. These include aneurysms in the following locations:

- a) Aortic arch; or
- b) Thoracoabdominal aorta (involving both the thoracic and abdominal aorta).

Detailed QBP definitions can be found in the following documents:

- Ontario Health – CorHealth Ontario and Ministry of Health Quality-Based Procedure Clinical Handbook: Non-Cardiac Vascular (Aortic Aneurysm)
- Ontario Health – CorHealth Ontario and Ministry of Health Quality-Based Procedure Clinical Handbook: Non-Cardiac Vascular (Lower Extremity Occlusive Disease)
- QBP Definitions for Ontario Health Region-Managed QBPs

Ministry of Health QBP information can be found on the Ministry of Health Health Data Branch Web Portal <https://hsim.health.gov.on.ca/hdbportal/>.