Regional Cardiac Program Framework

Core Responsibilities, Competencies, and Functions
Updated April, 2023

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Introduction

On December 1, 2021, CorHealth Ontario transferred into Ontario Health (OH). Our mandate spans cardiac, stroke, and vascular through the entire course of care, including secondary prevention, rehabilitation, and recovery. Ontario Health – CorHealth proudly advises the Ministry of Health (MOH), Ontario Health Regions, hospitals, and care providers to improve the quality, efficiency, accessibility, and equity of cardiac, stroke, and vascular services for patients across the province.

The Ontario Health - CorHealth Regional Cardiac Program Framework aims to transparently define the roles and responsibilities of a Regional Cardiac Program (RCP) and begin to standardize the services that patients can expect across Ontario. This document outlines responsibilities of a RCP, a combined cardiac service entity providing a comprehensive suite of cardiac services. This document should be consulted by hospitals when considering service expansion for the delivery of advanced cardiac services.

These responsibilities are based on four key roles as described in Section 1:

- Leadership Implementation & Service Coordination
- Provision of Patient Care & Services
- Quality Improvement, and Performance Monitoring & Management
- Best Practices & Evidence Uptake, Dissemination & Education

Section 1 - Core Roles and Responsibilities

The RCP encompasses a combined cardiac services entity, which supports the full continuum of cardiac care and will allow for cardiac patients to receive all aspects of care (i.e., diagnosis, treatment, rehabilitation, disease management). As with many established regional programs, which often follow a hub-and-spoke model, a RCP will function though partnerships across a region (i.e., regional cardiac provider sites) and through coordinated services (i.e., working with coordinated referral centers for primary care, rehab services, palliative care, etc.).

In partnership with the Ministry of Health (MOH), Ontario Health Regions, Ontario Health – CorHealth, and Hospital Facilities, a RCP plays a fundamental role in ensuring the people of Ontario have equitable access to high quality cardiovascular services. Through ongoing dialogue and discussions, OH Regions and OH – CorHealth will provide support to a RCP to plan for the impact of population growth and assess current and future needs for cardiac services. The RCP will maintain oversight and responsibility with respect to informing the allocation and coordination of regional funds. Additionally, the RCP will be held responsible for quality and performance monitoring and management, as well as the uptake and dissemination of best practices and evidence. The core roles and responsibilities of an RCP are detailed further in Table 1.

Table 1: Core Roles and Responsibilities of a Regional Cardiac Program

Roles	Responsibilities
1. Leadership, Implementation & Service Coordination	• Lead, implement, and integrate cardiac care throughout the region: function across all points in the spectrum of cardiac care • Identify and provide strategies to meet local needs for service integration and coordination • Incorporate a strong level of community/public engagement for regional program planning • Coordinate services for alignment across regional cardiac providers, referring centers, and within the region
2. Provision of Patient Care and Services	• Provide complex clinical services, depending on cardiac provider Level (i.e., cardiology service, device clinic, pacemaker/ implantable cardioverter defibrillators, catheterization (cath), percutaneous coronary intervention (PCI), cardiac surgery, electro-physiology studies, and ablations, transcatheter structural and congenital procedures) ○ Negotiate with other RCPs, when necessary, to ensure patient access to clinical services not offered on site at the RCP

	• Provide an adequate number of designated cardiac beds, other in-patient and ambulatory care resources, as well as physical capacity to support all levels of cardiac care and clinic activities • Identify and provide necessary human resources (i.e., available, trained, and credentialed staff, multidisciplinary heart team) • Planning and coordination of services at the RCP level is carried out in collaboration with the MOH, OH Regions, and Ontario Health - CorHealth • Advise on the allocation of regional resources and infrastructure
3. Quality Improvement, and Performance Monitoring & Management	• Ensure that a comprehensive quality assurance and improvement program is established, which will include RCP evaluation, performance monitoring, and management for the region (i.e., assessing where and how services are provided, monitoring adverse events)
4. Best Practices & Evidence Uptake, Dissemination & Education	• Focus on the adoption of best practices related to cardiac care, based on published evidence and guidelines; establish clearly defined clinical cardiac care pathways • Foster the uptake of provincial standards by engaging providers through the dissemination of provincial standards and information about the region's performance relative to the standards • Participate in ongoing education & training and serve as a point for mentorship and education for cardiac providers

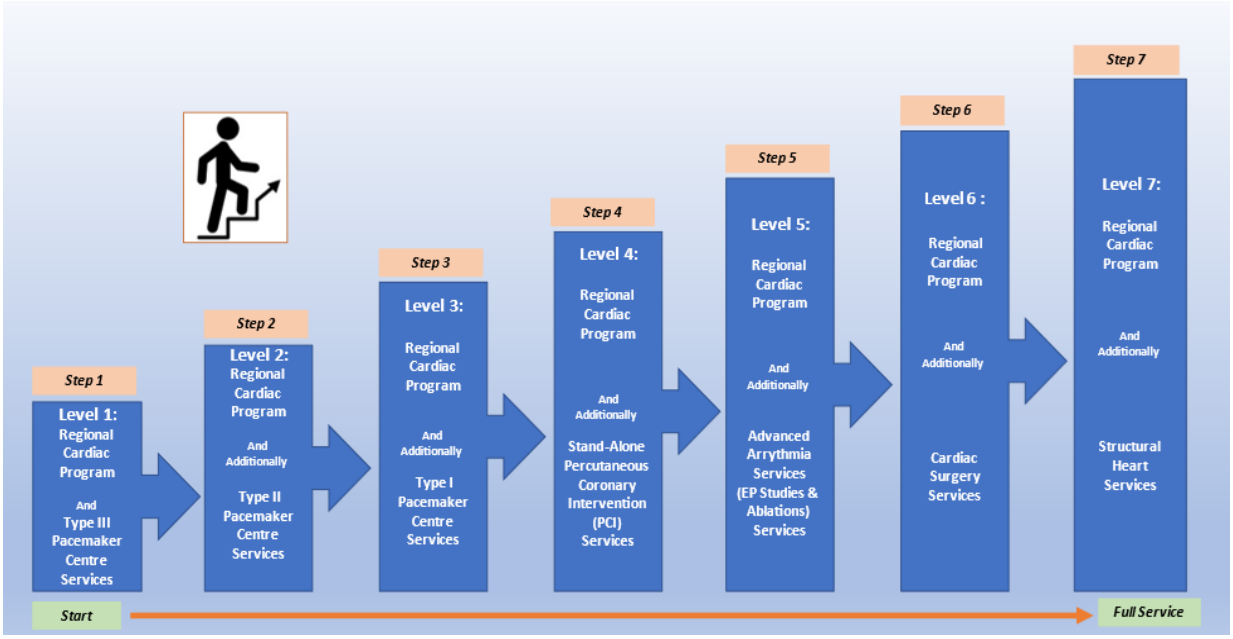
Section 2.1 - Service Provision Levels

Each RCP is expected to coordinate and deliver a comprehensive range of cardiac services to patients, either at the regional cardiac provider site (e.g., hospital), or through coordination with referral cardiac centres. The RCP Framework further describes seven distinct levels of cardiac providers based on the complexity of cardiac services they provide. Each level is additive, in that the levels each have minimum criteria, and the additional criterion in the subsequent levels supports the advancement of the services (Figure 1).

The criteria for each distinct service provision level have been grouped into the following categories: 1) Operational Standards; 2) Facilities and Equipment; 3) Health Human Resources; 4) Partnerships and 5) Quality Assurance. This criterion is further described in Section 2.

To ensure continuity between service levels the criteria of the previous level must be met before progress to the next level is considered. Appendix B provides a high-level overview of the process RCP are required to follow when requesting new services or expanding existing services from one level to the next level. Each progression will require a fulsome business case to support the service expansion proposal, which includes impact of existing RCPs. The purpose of the RCP Framework is to ensure all RCP across the province deliver a high standard of comprehensive cardiac services for the cardiac patient population.

Figure 1: Regional Cardiac Program Service Provision Levels



Section 2.2 - Service Provision Level Definitions

Level 1

Description
In addition to the core roles and responsibilities of a RCP, a Level 1 program demonstrates clinical competency and expertise providing non-procedural cardiac care. These providers shall administer a wide array of preventative, screening, diagnostic, treatment, and rehabilitative services for cardiac patients.

Criteria: Level 1

1) Operations
On-site in-patient and ambulatory care services with access to: • Cardiologist 24/7 • Medical consultation from other departments (i.e., nephrology, neurology, endocrinology, hematology) • Acute and intensive cardiac specialty care • Core laboratory and blood bank services • Cardiac testing and diagnostics (i.e., Electrocardiogram (ECG), Stress Test, Echocardiography (both transthoracic and transesophageal) • Medical imaging services (i.e., radiology, ultrasound) with timely access to gated computed tomography (CT) onsite at the RCP to perform CT Coronary Angiography and access to Cardiac Magnetic Resonance Imaging (MRI), either on site or in collaboration with another RCP. • Ambulatory services that include interprofessional management of heart failure and other comorbid conditions (i.e., diabetes, chronic renal disease) • Partnership and repatriation agreements with centres providing advanced cardiac procedures (i.e., diagnostic cath, PCI, electrophysiology, cardiac surgery), including rapid transfer of ST-Elevation Myocardial Infarction (STEMI) patients • On-site or formal access to outpatient cardiovascular rehabilitation services (i.e., secondary prevention) • On-site or formal access to an outpatient multidisciplinary heart function clinic
Pacemaker Services – Type III Pacemaker Centre (See Appendix A) • Type III centres have arrhythmia device clinic (ADC) services; These centres do not implant devices but must maintain a minimum caseload of 200 follow-up patients per year[i] • Type III centres must have links with a Type I and/or Type II pacemaker centre for referral and consultation regarding device system management
Emergency department (ED): • With standardized patient care pathways including protocols for the management of patients presenting with STEMI, Acute Coronary Syndrome (ACS), Non-STEMI/Unstable Angina, Stroke, Acute Heart Failure

2) Facilities and Equipment
• Level 3 ICU/CCU facilities • Cardiac intensive care unit (CICU) beds and cardiology inpatient ward beds with defined clinical care pathways and standard order sets[ii] • On-site core laboratory providing comprehensive lab testing services 24/7 supporting both routine and urgent testing for inpatient medical, surgical, intensive care, and outpatient ambulatory clinic • Non-invasive testing including echocardiography, 12-lead ECG and exercise ECG stress testing, and nuclear cardiac diagnostic modalities for evaluation of complex patients • Medical imaging including timely access to on site gated computed tomography (CT) to perform CT coronary angiography
3) Health Human Resources
• Interprofessional Heart Team: including but not limited to cardiologists, registered nurses, allied health professionals with specialized training and certification in the CICU, and cardiac in-patient unit • The care processes for all cardiac patients shall be managed by cardiologists; A cardiologist shall be available for patient assessment 24/7[iii] • Personnel trained in device management and operation of device analyzer, programmer
4) Partnerships
• Formal partnerships with a higher-level cardiac centre to ensure patients have access to more complex services. Partnership agreements should include but are not limited to: repatriation agreements, mentor relationships, case consultation, and peer-to-peer support for emergent case management. • Formal partnerships with a cardiac rehabilitation service provider(s)
5) Quality Assurance
• Patient stabilization protocols and inter-hospital transport processes for the management of critically ill cardiac patients requiring transfer to a higher level of care facility • Comprehensive quality assurance program including clinician evaluation, patient reported outcome measures, and monitoring systems to ensure ongoing quality improvement • Data collection and submission as required

Level 2

Description
A Level 2 RCP demonstrates all the minimum requirements of a Level 1 RCP with the addition of Type II Pacemaker Services (see Appendix A).

Criteria: Level 2

1) Operations
Requirements as per Level 1 with the addition of Type II Pacemaker Services Pacemaker Services - Type II Pacemaker Centre (see Appendix A) • Type II centres implant an anticipated volume of at least 50 new pacemakers per year (excluding replacement devices) with the capability and expertise to implant both single and dual chamber devices • Follow-up care must be provided either at the Type II centre, with a minimum of 200 follow-up patients per year, or at a designated arrhythmia device clinic to which they are closely associated • To maintain competency in permanent pacemaker implantation, each individual implanting physician must implant a minimum of 50 new devices per year • Type II centres will have linkages with Type I Pacemaker centres for patient referral and consultation for device system management, staff education, and research
2) Facilities and Equipment
• Access to an implant centre that meets operating room standards for scrub and prep areas, air exchange, and staff attire • Implant centre must have the capacity to administer full anaesthetic delivery and resuscitation, including temporary pacing (external and temporary wire) and external defibrillation
3) Health Human Resources
• Personnel trained in device management and operation of device analyzer, programmer and to support the technical aspects of the implant procedure
4) Partnerships
Requirements as per Level 1
5) Quality Assurance
Requirements as per Level 1

Level 3

Description
A Level 3 RCP demonstrates all the minimum requirements of a Level 2 Program with the addition of Type I Pacemaker Services.

Criteria: Level 3

1) Operations

Requirements as per Level 1 and 2 with the addition of Type I Pacemaker Services
 	
Pacemaker Services -Type I Pacemaker Centre (See Appendix A)
• Type I centres implant the full range of devices, including single- and dual-chamber pacemakers, Implantable Cardioverter Defibrillators (ICD), cardiac resynchronization therapy (CRT) pacemakers, and CRT-ICD
• They perform at least 200 new implants per year (excluding replacement devices) and provide follow-up care for at least 500 patients with the full range of device types, including complex diagnostics
• Perform the recommended minimum case volumes per implanting physician: in accordance with each specialty
  ○ Minimum of 50 new devices per year per implanting physician
  ○ Minimum 10 ICD and 10 CRT cases with a minimum of 20 follow-up patients seen per year per implanting physician

2) Facilities and Equipment
Requirements as per Level 1 and 2
3) Health Human Resources
Requirements as per Level 1 and 2
4) Partnerships
Requirements as per Level 1 and 2
5) Quality Assurance
Requirements as per Level 1 and 2 • Participation in the Ontario Health – CorHealth Cardiac Registry

Level 4

Description
A Level 4 RCP demonstrates all the minimum requirements Level 3 Programs. In addition, Level 4 centres provide diagnostic cardiac catheterization and stand-alone-percutaneous coronary interventions (SA-PCI) services. A Level 4 program builds on all the elements of a Level 3 RCP, and must also meet the following additional criteria:

Criteria: Level 4

1) Operations

Requirements as per Level 1, 2, and 3 with the addition of:
• Diagnostic cardiac catheterization laboratory (lab) performing an anticipated volume of a minimum of 1,500 diagnostic catheterization procedures annually [iv]
• RCP must have an anticipated volume of a minimum of 400 PCI procedures annually[v]
• Provider must be able to offer 24/7 on-call services for the treatment of STEMI patients
  ○ For new providers, a phased approach to service introduction should be implemented with a provider performing minimum annual catheterization volumes prior to the introduction of PCI services:
  ▪ A provider performing 400 minimum annual PCI volumes prior to introduction of primary PCI (PPCI) services for the treatment of STEMI
  ▪ Full implementation of a 24/7, on-call PPCI program should occur by year 3 of operations
• Emergent/urgent echocardiography must be available for in patients 24/7

2) Facilities and Equipment
Requirements as per Level 1, 2, and 3 with the addition of: • Two (2) full service cardiac catheterization labs or hybrid operating rooms (OR) that meet OR standards, and are equipped with a fixed radiographic imaging system with high resolution fluoroscopy and facility for cineangiography and hemodynamic monitoring system
3) Health Human Resources
Requirements as per Level 1, 2, and 3 with the addition of: • Minimum of three (3) experienced interventional cardiologists[vi] • Interprofessional Heart Team: additional members should include registered nurses with training in catheterization lab specialized care, cardiac technicians, and medical radiology technologists • Anaesthesia services must be available 24/7
4) Partnerships
Requirements as per Level 1, 2, and 3 with the addition of:

• Formalized partnerships with non-PCI hospitals/ED and local Paramedic Services supporting the regional STEMI systems of care (i.e., no-refusal service agreements, repatriation agreements)
5) Quality Assurance
Requirements as per Level 1, 2, and 3

Level 5

Description
A Level 5 RCP demonstrates all the minimum requirements of Level 4 Programs and builds on the elements of the Stand-Alone PCI Provider. In addition, a Level 5 RCP provides advanced arrhythmia services including electrophysiology (EP) studies, simple and complex ablation procedures and, at select hospitals, lead extractions (i.e., use of laser/telescoping sheaths). The Level 5 RCP is an advanced arrhythmia provider meeting the following criteria:

Criteria: Level 5

1) Operations
Requirements as per Level 1, 2, 3, and 4 with the addition of: • Must have an anticipated minimum volume of 200 cases that must consist of a combination of EP studies, standard ablations, and complex ablations[vii]   ○ Minimum of 50 cases per operator/year for diagnostic EP studies • Long term management of patients with comprehensive follow-up services must be provided on site or in partnership with arrhythmia device clinics; follow-up care and discharge plans are to include outreach clinics and/or telephone transmission (remote monitoring) with consideration given to the expansion of services where new or existing locations are required[viii] • Access to on-site surgical back-up for when referral of EP patients to cardiac surgery is warranted and in case of emergency. If on-site surgical back-up is not available, a formal, documented partnership with a Cardiac Surgery Centre for referral intake and emergency back-up is required • Access to heart failure team
2) Facilities and Equipment
Requirements as per Level 1, 2, 3, and 4 with the addition of: • Full-service electrophysiology lab with connecting workroom outfitted with the appropriate specialized equipment • Post anaesthetic recovery area with continuous and non-continuous ECG monitoring
3) Health Human Resources
Requirements as per Level 1, 2, 3 and 4 with the addition of: • Minimum of two qualified electrophysiologists with experience in standard and complex ablations, implantation, and follow-up of pacemakers, ICDs, and CRT[ix] • Interprofessional Heart Team to support EP lab activity: registered nurses with advanced training in EP equipment and patient care, EP technicians, medical radiology technologist (MRT), and cardiac anesthetists
4) Partnerships
Requirements as per Level 1, 2, 3, and 4 with the addition of:

• If on-site surgical back-up is not available, a formal, documented partnership with a Cardiac Surgery Centre for referral intake and emergency back-up is required
5) Quality Assurance
Requirements as per Level 1, 2, 3, and 4

Level 6

Description
A Level 6 RCP demonstrates all the minimum requirements of Level 5 Programs and builds upon the elements of a SA-PCI and Advanced Arrhythmia Provider. Level 6 centres are cardiac surgery providers and can perform open heart cardiac surgery. The Level 6 RCP is a cardiac surgery provider meeting the following criteria:

Criteria: Level 6

1) Operations
Requirements as per Level 1, 2, 3, 4, and 5 with the addition of: • Performs catheterization and PCI procedures on complex cases[x] • Cardiac surgical volume minimum of 300 cases annually[xi] • Cardiac surgery procedures available 24/7[xii]
2) Facilities and Equipment
Requirements as per Level 1, 2, 3, 4, and 5 with the addition of: • Two (2) full service cardiac operating rooms • Dedicated cardiovascular intensive care unit (CVICU) beds
3) Health Human Resources
Requirements as per Level 1, 2, 3, 4, and 5 with the addition of: • Minimum of three (3) experienced cardiac surgeons[xiii] • Interprofessional Heart Team to support cardiac surgery activity: registered nurses with advanced cardiovascular operating room (CV-OR) and CVICU training and critical care certification, cardiovascular perfusionists, and cardiac anesthetists • Well established Interdisciplinary Heart Team (IHT) that is in adherence to all criteria as outlined in the OH-CorHealth IHT Model Link to IHT Model: https://www.corhealthontario.ca/resources-for-healthcare-planners-&-providers/mish/Interdisciplinary-Heart-Team-Model.pdf
4) Partnerships
Requirements as per Level 1, 2, 3, 4, and 5
5) Quality Assurance
Requirements as per Level 1, 2, 3, 4, and 5

Level 7

Description
A Level 7 RCP demonstrates all the minimum requirements of Level 6 Programs and additionally provides both structural and congenital transcatheter procedures (i.e., transcatheter aortic valve implantation, transcatheter atrial septal defect (ASD) closure). As new technologies and interventions are developed, this section will be updated accordingly with specific operations, health human resources, facilities, partnerships, and quality assurance. The Level 7 RCP is a provider meeting the following criteria:

Criteria: Level 7

1) Operations
Requirements as per Level 1, 2, 3, 4, 5, and 6 with the addition of: • See specific Structural Heart Specialties for requirements as they are released Link to Minimally Invasive Structural Heart (MISH): https://www.corhealthontario.ca/resources-for-healthcare-planners-&-providers/mish/mish-resources
2) Facilities and Equipment
Requirements as per Level 1, 2, 3, 4, 5, and 6 with the addition of: • See specific Structural Heart Specialties for requirements as they are released Link to MISH: https://www.corhealthontario.ca/resources-for-healthcare-planners-&-providers/mish/mish-resources
3) Health Human Resources
Requirements as per Level 1, 2, 3 ,4, 5, and 6
4) Partnerships
Requirements as per Level 1, 2, 3, 4, 5, and 6
5) Quality Assurance
Requirements as per Level 1, 2, 3, 4, 5, and 6 with the addition of: • See specific Structural Heart Specialties for requirements as they are released Link to MISH: https://www.corhealthontario.ca/resources-for-healthcare-planners-&-providers/mish/mish-resources

Appendix A

Organization of Implant Centres in Ontario

In Ontario, pacemaker centres are organized according to the type of services and expertise they provide. Each of the three (3) service types are associated with minimum annual volume patient follow-up. In addition, Type II and Type I Centres must perform the minimum implant volumes. These annual minimum volumes by centre type are outlined in the tables below.

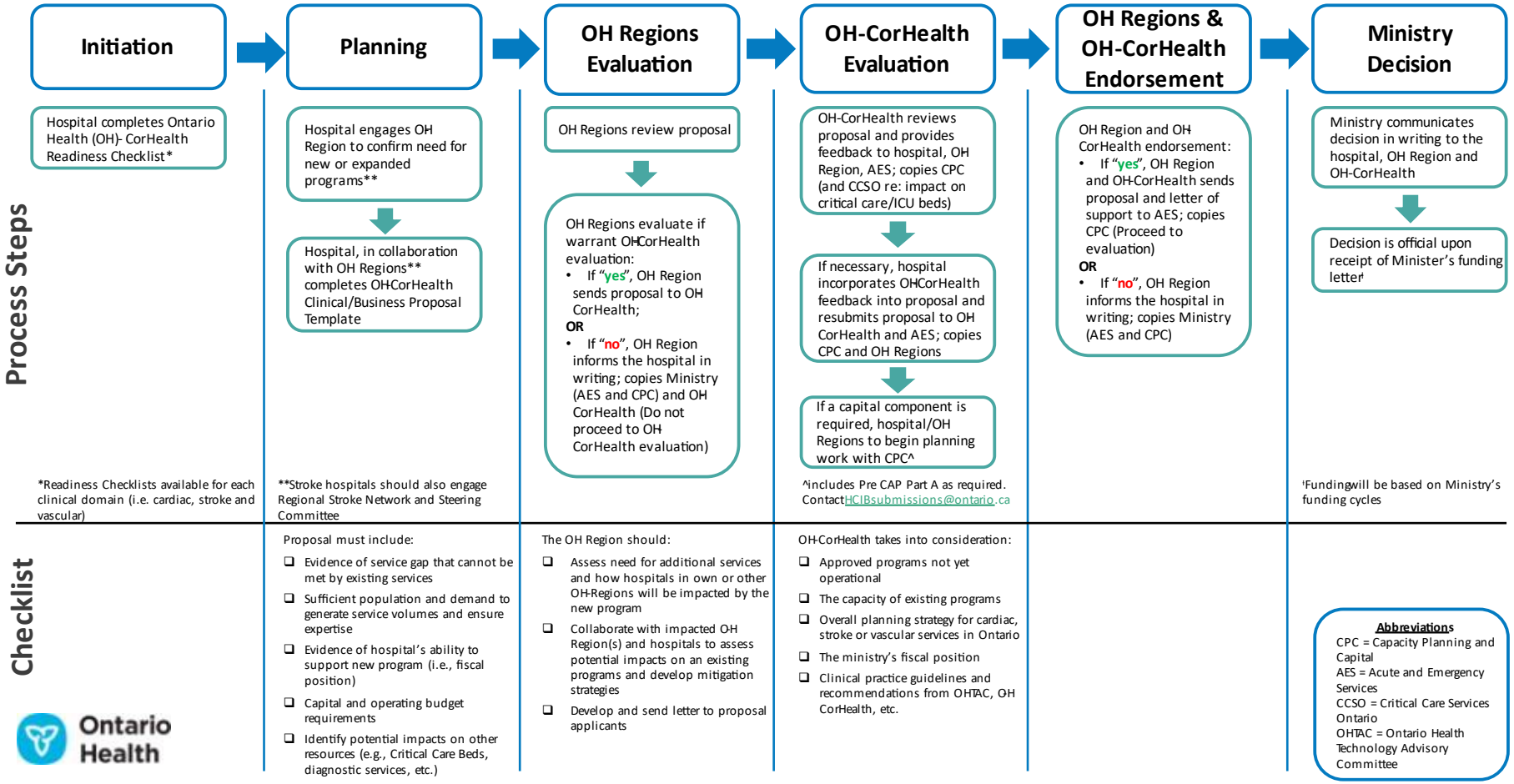
Type III Centre
Type III centres are also known as arrhythmia device clinics (ADC). A type III centre does not implant devices but maintains a minimum caseload of 200 follow-up patients per year. The ADC maintains linkages with either a Type I or Type II centre for referral and consultation regarding device system management.

Type II Centre
Type II centres implant at least 50 new pacemakers per year (excluding replacement devices) with the capability and expertise to implant both single- and dual-chamber devices. Follow-up care must be provided either at the Type II centre, with a minimum of 200 follow-up patients per year, or at a designated arrhythmia device clinic to which they are closely associated. To maintain competency in permanent pacemaker implantation, each individual physician must implant a minimum of 50 new devices per year. Type II centre have linkages with Type I centres for patient referral and consultation for device system management, staff education, and research. (Note: For predictably difficult implants (i.e., history of difficult lead placement, congenital heart disease, lead upgrades, patients with extremes of body mass index (BMI), etc.), type II centres should consider consultation with their type I centre prior to implant unless the implanter has significant experience in these situations.

Type I Centre
Type I centres implant the full range of devices, including single- and dual-chamber pacemakers, ICDs, cardiac resynchronization therapy (CRT) pacemakers and CRT-ICDs. Type I centres perform at least 200 new implants per year (excluding replacement devices) and provide follow-up care for at least 500 patients with the full range of device types, including complex diagnostics. To maintain competency in permanent pacemaker implantation, each individual physician must implant a minimum of 50 new devices per year. Type I centres may be involved in research specifically related to arrhythmia device therapies.

Appendix B

Process for New/Expanding Cardiac, Stroke, and Vascular Program Proposals



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[iv] Cardiac Care Network of Ontario (CCN), 2013. Cardiac Services Roadmap, Toronto: CCN

[v] ibid

[vi] ibid

[vii] Cardiac Care Network of Ontario (CCN), 2011. Recommendations for Permanent Pacemaker Services in Ontario, Toronto: CCN

[viii] ibid

[ix] Cardiac Care Network of Ontario (CCN), 2013. Cardiac Services Roadmap, Toronto: CCN.

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[xii] ibid

[xiii] ibid