Ontario Society of Cardiology Technologists

Scope of Practice – 2025

Introduction

This document defines the Scope of Practice for Cardiology Technologists in Ontario, outlining their professional roles, core responsibilities, and competencies. It provides a framework that ensures the delivery of safe, effective, and ethical diagnostic cardiac care. This scope is designed to reflect practices in Ontario while aligning with national standards where applicable.

Registration and Professional Development

To practice as a Cardiology Technologist in Ontario, individuals must:

- Graduate from a Cardiovascular Technology accredited program.
- Obtain certification by successfully completing the Canadian Society of Cardiology Technologists (CSCT) examination.
- Maintain registration with the Ontario Society of Cardiology Technologists (OSCT).

Cardiology Technologists are expected to engage in lifelong learning to maintain and enhance their knowledge, skills, and professional competence. This includes staying informed about advancements in cardiology, evolving best practices, legal and ethical considerations, and relevant regulatory guidelines.

Professional Responsibilities

Cardiology Technologists must adhere to the highest standards of professional and ethical conduct, including:

- Ensuring patient safety, confidentiality, and informed consent.
- Staying updated on current best practices and technological advancements.
- Collaborating effectively with patients, physicians, and multidisciplinary healthcare teams.
- Complying with workplace policies, professional codes of ethics, and applicable legislation.

Ethical and Collaborative Practice

Cardiology Technologists work as part of a multidisciplinary healthcare team. They are expected to:

- Advocate for patient-centered care.
- Communicate effectively with patients, families, and healthcare providers.
- Uphold professional integrity, confidentiality, and ethical standards in all interactions.

Core Competencies

Cardiology Technologists in Ontario are healthcare professionals with expertise in conducting non-invasive cardiac tests. They are responsible for:

- Patient identification and history-taking
- Monitoring and assessing patient vitals
- Preparing patients and equipment for diagnostic procedures
- Perform and analyze electrocardiograms in outpatient and emergency settings
- Perform and analyze exercise stress tests and nuclear tests
- Perform and analyze ambulatory recordings (i.e. Holter monitoring, Blood Pressure monitoring)
- Recognizing and responding to abnormal findings
- Assess pacemakers and other implantable cardiac devices
- Perform Electrophysiology Testing
- Assist other allied health professionals in cardiac rehabilitation centers
- Provide emergency life support

Diagnostic Testing Procedures

The following outlines the scope of practice for specific diagnostic cardiac tests based on standard protocols and professional competencies.

Electrocardiograms

Electrocardiograms (ECGs or EKGs) are non-invasive tests that measure the heart's electrical activity to detect abnormalities in rhythm, rate, and overall cardiac function. Electrodes are placed on the patient's chest, arms, and legs to record electrical signals, which are displayed as wave patterns on a monitor or printout. ECGs are essential in diagnosing conditions like arrhythmias, heart attacks, and other cardiac disorders, providing critical information for patient care and treatment planning.

Patient Preparation:

- Identify the patient and confirm their identity using approved methods (e.g., name, date of birth, medical record number)
- Perform accurate land marking for electrode placement on a 12-lead ECG
- Adapt electrode positioning to accommodate individual patient needs as required
- Determine and position electrodes for right-sided and posterior leads when conducting a 15-lead ECG, if indicated
- Apply appropriate electrode placement techniques for pediatric patients when necessary
- Utilize Brugada leads in cases where additional diagnostic clarity is needed

Test Execution:

- Identify various types of artifacts and ensure an artifact-free tracing by troubleshooting and adjusting as necessary
- Adjust and optimize instrument settings to enhance the quality of the clinical data collected
- Compare the patient's current ECG tracing with any available previous tracings, where applicable, to identify any changes or trends

Post-Test Procedure:

- Evaluate whether additional tracings or rhythm strips are required based on initial results
- Proper removal of electrodes
- Analyze the recorded ECG data, considering the patient's symptoms and current medications
- Communicate any significant findings to the patient's healthcare team and file the ECG tracing according to institutional protocols

Exercise Stress Testing

Exercise Stress Testing is a non-invasive diagnostic test used to evaluate the heart's response to physical exertion. During the test, the patient exercises on a treadmill or stationary bike while their heart rate, blood pressure, and electrocardiogram (ECG) are continuously monitored. The test helps detect potential heart conditions, such as coronary artery disease, arrhythmias, or exercise-induced symptoms, by assessing how well the heart functions under increased workload. In Ontario, exercise stress tests can be conducted under either **direct or indirect physician supervision**, depending on the patient's risk level and institutional protocols. Direct supervision requires the physician to be physically present, while indirect supervision allows trained professionals to perform the test with the physician available nearby. This aligns with best practice guidelines from professional organizations, including the Canadian Cardiovascular Society (CCS) and the American College of Cardiology/American Heart Association (ACC/AHA).

Patient Preparation:

- Identify the patient and confirm their identity using approved methods (e.g., name, date of birth, medical record number).
- Measure and record baseline vital signs (blood pressure, heart rate) and patient weight.
- Obtain and review the patient's medical history and assess their overall status to determine any contraindications
- Explain the test procedure, including potential risks, and obtain informed consent.
- Prepare skin sites by shaving body hair, cleaning with alcohol, and light abrasion to optimize results.
- Landmark lead placement for modified continuous ECG monitoring and apply electrodes
- Conduct a resting 12-lead ECG and evaluate findings for any issues that could affect test sensitivity. Escalate to appropriate personnel if needed.
- Perform risk assessment to categorize the test as low, moderate, or high risk and assess any contraindications
- Determine the appropriate protocol for the test (e.g., Bruce, Modified Bruce, Naughton).

Test Execution:

- Begin the exercise stress test according to the established protocol.
- Monitor and document the patient's vital signs, symptoms, and any ECG changes throughout the test.
- Alert the attending physician to any abnormal findings, such as significant ECG changes or concerning symptoms.
- Be prepared to initiate emergency protocols if necessary.
- Modify system settings (e.g., gain, paper speed, impedance) to optimize testing results.

Pre-Test and Post-Test Procedures:

- Assist the patient in cooling down and monitor their recovery.
- Remove electrodes and provide post-test instructions.
- Document the test results, including the patient's performance, ECG changes, and any symptoms reported during the test.

Nuclear Stress Testing

Myocardial Perfusion Imaging (MIBI) is a nuclear medicine test used to assess blood flow to the heart muscle during rest and stress conditions. It involves injecting a radioactive tracer and using a gamma camera to produce detailed images of the heart, helping to detect areas with reduced blood flow, blockages, or prior damage. This test is often performed in conjunction with stress testing (exercise or pharmacologic) to evaluate coronary artery disease, heart function, and overall cardiac health.

Exercise Component

Patient Preparation:

- Verify patient identity and record vital signs (blood pressure, heart rate) and weight.
- Obtain patient history and assess overall status.
- Explain the procedure, including risks, benefits, and potential side effects.
- Obtain informed consent.
- Prepare skin sites by shaving body hair, cleaning with alcohol, and light abrasion to optimize results.
- Landmark lead placement for modified continuous ECG monitoring and apply electrodes

Test Execution:

- Initiate the exercise component and monitor patient vitals, signs, and ECG for any abnormalities.
- Alert the physician to any concerns and follow emergency protocols if necessary.

Post-Test Procedure:

- Remove electrodes.
- Document findings and complete necessary paperwork.

Persantine - Pharmacologic Component

Persantine Stress Test is a diagnostic procedure used to assess coronary artery function in patients who cannot perform physical exercise. Persantine (dipyridamole) is administered to dilate the coronary arteries, mimicking the effects of exercise by increasing blood flow. This test is often paired with imaging techniques, like nuclear imaging, to evaluate for blockages or reduced blood flow in the heart.

Patient Preparation:

- Verify patient identity and record vital signs (blood pressure, heart rate) and weight.
- Obtain patient history and assess overall status.
- Explain the procedure, including risks, benefits, and potential side effects.
- Obtain informed consent.
- Set up the infusion pump for Persantine injection as per established protocol.
- Prepare skin sites by shaving body hair, cleaning with alcohol, and light abrasion to optimize results.
- Landmark lead placement for modified continuous ECG monitoring and apply electrodes

Test Execution:

- Begin the procedure and administer Persantine as per established protocol.
- Monitor and document patient vitals, signs and symptoms, and any ECG changes throughout the test.
- Alert the attending physician to any abnormal findings.
- Draw up aminophylline if required as part of emergency response.

Post-Test Procedure:

- Remove electrodes and provide post-procedure instructions.
- Document findings and complete necessary paperwork.

Dobutamine Stress Echocardiography (Pharmacologic Stress Test)

Dobutamine Stress Echocardiography is a diagnostic cardiac test used to assess heart function and detect coronary artery disease. It involves administering dobutamine, a medication that increases heart rate and mimics the effects of exercise, while echocardiographic images are taken to observe the heart's response. The test is typically performed on patients unable to exercise and helps evaluate how well blood flows to the heart during stress.

Patient Preparation:

- Measure and record patient height, weight, and baseline vital signs.
- Explain the procedure and confirm any contraindications
- Obtain informed consent and ensure the patient understands the steps involved.
- Prepare the necessary equipment, including infusion pumps.

Test Execution:

- Dobutamine is administered as per established protocol, following dosage flow:
  - Low flow: 5, 10, 15, 20
  - Regular flow: 5, 10, 20, 30, 40
- Monitor and document the patient's response at specific intervals.
- Communicate with the nurse and echocardiography technologist at key intervals
- Observe and document the patient's heart rate to determine when to stop Dobutamine and begin recovery phase upon physician instruction.
- Capture the final tracing when the patient's heart rate falls below 100 bpm, as directed.

Post-Test Procedure:

- End the test and confirm that the protocol has been completed.
- Document results and patient recovery status.

It's important to note that specific duties, including IV insertion and medication administration, may be delegated to Cardiology Technologists if permitted by institutional policies and if the technologist has received appropriate training and demonstrated competence. These activities are typically reserved for regulated healthcare professionals with specific authorization.

Therefore, Cardiology Technologists interested in expanding their scope of practice in these areas should consult their employer's policies and seek additional training as required.

Ambulatory monitoring

Ambulatory Blood Pressure Monitoring

Ambulatory Blood Pressure Monitoring (ABPM) is a non-invasive diagnostic tool used to measure a patient's blood pressure at regular intervals over a 24-hour period. This test provides essential information about a patient's blood pressure patterns during their normal daily activities and while they sleep, aiding in the diagnosis and management of hypertension and related cardiovascular conditions.

Patient Preparation:

- Confirm the patient's identity using approved methods (e.g., name, date of birth, and medical record number).
- Obtain and review relevant medical history, including any known blood pressure concerns, medications, and contraindications.
- Explain the purpose of the test, including how the device functions, expected sensations during cuff inflation, and how the results will be used. Provide instructions on how to keep a diary of activities, symptoms, and sleep times.
- Obtain informed consent, ensuring the patient understands the process and agrees to the monitoring.

Device Setup and Test Execution:

- Properly fit the ABPM cuff to the patient's non-dominant arm, ensuring correct positioning and comfort.
- Attach the monitor securely to the patient's body (e.g., on a belt or strap).
- Calibrate the device if required and conduct a test reading to confirm proper function.
- Instruct the patient on device handling, including minimizing movement during readings and troubleshooting common issues (e.g., handling error messages).
- Review the importance of maintaining normal daily activities during the monitoring period.
- Provide the patient with a diary to record key events such as physical activity, meals, stress, and sleep, along with any symptoms (e.g., dizziness, headaches).

Post-Monitoring Procedure:

- Download and review the recorded data, ensuring accuracy and completeness.
- Analyze the data for trends, such as nocturnal dipping, morning blood pressure surges, or masked hypertension.
- Document the results, including patient-reported diary entries, and prepare the report for the referring physician.

Holter Monitoring

Holter monitoring is a continuous, ambulatory electrocardiographic (ECG) test used to assess and record a patient's heart rhythm over an extended period, typically 24 to 48 hours or 7 to 14 days. Unlike a standard ECG, which captures heart activity at a specific moment, a Holter monitor detects intermittent arrhythmias, heart rate variability, and other cardiac irregularities that may not occur during a brief test.

Patient Preparation:

- Confirm the patient's identity using approved methods (e.g., name, date of birth, medical record number).
- Shave the electrode area if necessary, clean the skin with alcohol, and dry the site to ensure optimal contact.
- Use gauze and skin prep materials (like sandpaper if needed) to remove oils from the skin.
- Place electrodes on the proper anatomical landmarks based on the Holter monitor model.
- Explain how the device works and inform the patient about keeping a symptom diary.
- Advise the patient to record symptoms such as dizziness, palpitations, chest pain, or shortness of breath and note the time of occurrence.

Test Execution:

- Encourage the patient to go about their normal daily activities while wearing the monitor.

Post-Test Procedure:

- After the monitoring period, the patient returns the device.
- Remove the electrodes and inspect the patient's skin for any irritation.
- Download and review the recorded ECG data.
- Analyze the patient's symptom diary alongside the recorded heart activity to identify any correlation between symptoms and cardiac events (e.g., arrhythmias).
- Generate a comprehensive report for the cardiologist, including any detected abnormalities (e.g., atrial fibrillation, PVCs, bradycardia, tachycardia).
- File the report and ensure it is included in the patient's medical record for further clinical review.

Cardiac Rehabilitation

Cardiac rehabilitation (cardiac rehab) is a specialized program designed to help patients recover after experiencing a cardiac event or undergoing a cardiac procedure. The goal is to guide patients through a gradual recovery process, improve their stamina, and reduce the risk of future cardiac events or interventions. Common patients include those with valve repairs/replacements, coronary artery bypass grafts (CABG), and percutaneous coronary interventions (PCI). The Cardiology Technologist may perform treadmill stress testing (RAMP protocol) at intake and discharge, along with patient monitoring and follow-ups.

Pacemakers and Implantable Cardiac Devices

Pacemakers and implantable cardiac devices (ICDs), are used to regulate heart rhythm in patients with bradycardia, tachycardia, or life-threatening arrhythmias. Pacemakers help maintain a normal heart rate by delivering electrical impulses to the heart, while ICDs monitor heart rhythms and can deliver shocks to correct dangerous arrhythmias. Cardiology Technologists assist Cardiologists with the implantation, monitoring, and follow-up of these devices, including device interrogation and programming.

Electrophysiology (EP) Testing and Procedures

Electrophysiology (EP) studies assess the heart's electrical activity to diagnose and treat abnormal heart rhythms (arrhythmias) such as atrial fibrillation, supraventricular tachycardia (SVT), and ventricular tachycardia (VT). These invasive tests involve inserting catheters into the heart to evaluate electrical conduction and locate the source of arrhythmias. Cardiology Technologists assist Electrophysiologists during EP procedures, providing essential technical support, monitoring, and patient care.

Conclusion

This Scope of Practice document serves as a guide for Registered Cardiology Technologists practicing in Ontario. While the competencies outlined above represent the core areas most commonly utilized in practice, RCTs in Ontario are trained to perform a wide variety of additional tasks as delegated by their institution. The scope of practice is dynamic and may expand to meet the needs of patients, teams, and evolving healthcare environments.