CERTIFICATE PROGRAM

CERTIFICATE IN BREAST IMAGING SCREENING

CANDIDATE HANDBOOK

2025

Tel: 1-800-463-9729 or (613) 234-0012
www.camrt.ca
specialtycertificates@camrt.ca

PROGRAM TIMELINES

The CBIS program must be completed within **five years of successful completion of the first eligible full-length Breast Imaging course. This is the "established 5-year timeframe" of the certificate program.**

Once registered in the certificate program, the candidate may begin working on their Summary of Clinical Competencies (SCC). **The SCC must be completed within three years of the date of first clinical entry.**

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Introduction

Breast cancer is a complex disease that will affect many Canadian women during their lifetime. It is the most common cancer in Canadian women over the age of 20. Since the peak of breast cancer deaths in 1986 there has been a decrease by almost 40% due to early detection through regular mammography screening, advances in imaging technology and improved treatments.

Breast imaging dates to the early 1900's with standard x-ray equipment, high kV techniques, non-screen film with manual processing, minimal if any compression and radiation doses far exceeding today's standards. In 1960 the concept of low kV / high mA techniques with dedicated imaging units was introduced and the next few decades found changes in equipment design, and film/screen and processing technology.
Breast imaging today uses digital technology and includes many imaging modalities. Advances in breast screening technology and quality standards have increased the breast cancer survival rate by helping to reduce death and disability caused from breast cancer.

Medical radiation technologists (MRTs) who perform screening mammography and other breast imaging procedures have a special role in the healthcare of the public. MRTs must be highly competent practitioners excelling in their ability to produce quality images and to manage the patient with care and expertise in a highly technical environment.

The CBI programs in screening and diagnostic breast imaging are designed to provide a means that will provide knowledge and clinical competence. It is recognized with a designation that will be sought after by technologists and encouraged and advocated for by employers. Candidates who successfully complete the didactic and clinical components from CAMRT are eligible to receive a Certificate in Breast Imaging Screening and can use the credential "CBIS".

Individuals with questions about certificate programs are encouraged to contact us. Email is preferred for the quickest service.

Canadian Association of Medical Radiation Technologists
Tel: 1-800-463-9729 or (613) 234-0012
specialtycertificates@camrt.ca

Purpose of the Program

This Certificate in Breast Imaging – Screening (CBIS) is intended to provide a mechanism for radiological technologists to demonstrate knowledge and competence in the screening mammography aspect of breast imaging, to promote standards of excellence within this clinical area, and to identify those who have met a nationally recognized standard.

This certificate is intended to:
- be dynamic and progressive in nature
- address the current and future challenges in screening mammography
- become the Canadian *gold standard* for those working in this clinical area
- provide a Canadian credential that is admired and sought by employers
- provide a recognition mechanism for the public to identify technologists who have achieved a level of excellence in screening mammography
- provide an opportunity for continuing professional development
- enhance safe and effective practice as described by the *CAMRT Member Code of Ethics and Professional Conduct– see https://www.camrt.ca/mrt-profession/professional-resources/code-of-ethics/.*

The CBI Committee strives to keep aware of current practice in breast imaging. As such, the CBIS Handbook is updated regularly.

Eligibility

The CAMRT Breast Imaging Certificate program for screening mammography is available to:

- Medical radiation technologists who have been certified by CAMRT in the practice of radiological technology
- Internationally educated medical radiation technologists (IEMRTs) in the specialty of radiological technology who are graduates of medical radiation technology programs substantially like Canadian accredited programs
    - Documentation required from IEMRTs*
        - Notarized copy of diploma /degree/certificate from entry-level education program.
        - Original letter from entry-level education program verifying length of program to include both didactic and clinical components.
        - IEMRT Attestation Letter (**APPENDIX A**)

*Required documentation not received within 30 days of program registration will result in a program cancellation/partial refund.

CAMRT strongly recommends candidates obtain required documentation prior to program registration and send it electronically in a SINGLE SCAN or PDF within the required timeframe to CPD@camrt.ca or specialtycertificates@camrt.ca.

Candidates may only begin working on the Summary of Clinical Competence upon approval of required documentation by the CAMRT.

Prerequisite requirements for application to the CBIS

- Successful completion of CAMRT's **Breast Imaging 1 and Breast Imaging 2** examinations. A mark of 75% or higher is required on each Breast Imaging (BI) final examination. "Mammography 1" and "Mammography 2" courses are no longer accepted in the CBI programs.

- Successful completion of CAMRT's **Bring Your Position Upfront: Breast Positioning** virtual lecture. A mark of 75% or higher is required on the final post quiz.

Overview & Registration

The CBIS program has both didactic and clinical components. You must register in each course individually (didactic components) *and* into the certificate program to access the Summary of Clinical Competence (clinical component) after meeting any prerequisite requirements.

Registration for the Certificate in Breast Imaging – Screening (CBIS) program is done through the CAMRT website, after you have completed the pre-requisite requirements. After registration, there is (1) didactic requirement and (1) clinical requirement that must be completed.

Required documentation for IEMRTs and/or their chosen clinical advisor not received within 30 days of registration will result in a program cancellation/partial refund.

Upon confirmed registration into this program, the Summary of Clinical Competence (SCC) will be made available in the candidate's personal profile on the CAMRT website. After review and approval of all components by the Breast Imaging Committee, the Certificate in Breast Imaging – Screening is granted to the technologist. The credential granted is **CBIS.**

NOTE: CAMRT both advises and expects that the candidate will hold sufficient personal liability coverage and any other employer required insurance coverage (ex: WSIB, AD & D) and receive the required permissions needed to complete the clinical requirements as outlined in the SCC. It is the candidate's responsibility to ensure they have the appropriate insurance coverage and permissions from their employer to complete this certificate program.

Clinical Advisor (CA)

It is the candidate's responsibility to obtain a CA and site for the clinical component of the program. If multiple sites are used, a CA must be identified at each site. Please ensure that the CA completes all SCC introductory forms (contact information, checklist, roles and responsibilities form) once you register into the program to ensure the clinical advisor/delegated assessor is made aware of their role.

Each Advisor is responsible for assigning their own Delegated Assessor (DA), if applicable, and to ensure they have signed all forms and pages where these signatures appear. All signatures throughout the SC must match. The following criteria also apply to international CAs for international candidates.

The Clinical Advisor (CA) must:

- be a medical radiation technologist practicing in **mammography**
- have a minimum of five years' experience in the practice of **mammography**
- not be currently registered in either CBIS or CBID Certificate programs
- perform the assessment on the candidate for procedures/related competencies or delegate assessment to another mammographer
- verify that others identified to assess candidates (i.e. Delegated Assessor) are competent in their practice
- a clinical advisor with a CBI (Screening or Diagnostic) is preferred but not mandatory.

The importance of an ongoing QC program is an integral part of a breast imaging center. However, we recognize that a radiologist acting as CA may not be familiar with the stringent QC procedures required for dedicated mammography. In this situation a department QC technologist, a supervisor or manager of the diagnostic imaging department must sign off. We trust that it is in the best interest of the breast imaging department to have mammography technologists competent in QC procedures.

The clinical advisor must attest to the competency of the candidate personally or by delegation to a competent individual(s) with the appropriate credential and expertise. The clinical advisor must attest to the competency of the candidate personally or by delegation to a competent individual(s) with the appropriate credential and expertise.

It is the **Clinical Advisor's** responsibility to ensure the DA is aware of their role. All professionals acting as DAs must be identified on the Delegated Assessors Contact Information page in the SCC.

The Role of a Clinical Advisor form can be found in APPENDIX E.

Delegated Assessor (DA)

The DA must:

- be a medical radiation technologist practicing in **mammography**
- have a minimum of three years' experience in the practice of **mammography**
- not be currently registered in either CBIS or CBID Certificate programs
- perform the assessment on the candidate for procedures/related competencies when the CA is unable to do so.

All professionals signing in the SCC must be identified on the Delegated Assessors form. You may duplicate forms as needed.

Clinical Advisors outside of Canada:

The following must be submitted within 30 days of program registration*:

- A notarized copy of the advisor's credentials (degree, diploma, or certificate)
- A copy of the ***Internationally Educated Medical Radiation Technologist Clinical Advisor Verification of Experience*** **form (See APPENDIX F.** The hospital seal must be affixed to this form prior to submission.
- Clinical Advisor (CA) Check List (**See APPENDIX G**)

All internationally educated clinical advisors must submit a sealed IEMRT Clinical Advisor Verification of Eligibility Form.**

**Required documentation not received within 30 days of program registration will result in a program cancellation/partial refund.*

*****Including those who have a CBI, CBIS or CBID credential.***

CAMRT strongly recommends candidates obtain required documentation prior to program registration and send it electronically in a SINGLE SCAN or PDF within the required timeframe to CPD@camrt.ca or specialtycertificates@camrt.ca

Candidates may only begin working on the Summary of Clinical Competence upon approval of received documentation from CAMRT.

CBIS Program Overview

Registration into the CBIS program is available once candidates have successfully completed: Breast Imaging 1, Breast Imaging 2, Bring your Position Up Front: Breast Positioning (Virtual Lecture).

Certificate Components	Didactic (coursework) Requirement • Breast Cancer: An Overview Quick Self Study. A minimum mark of 75% or higher on the post quiz is required.
	Clinical (competencies) Requirement • A Summary of Clinical Competence (SCC), Experience Verification, verification of performing a minimum of 750 cases.
Timelines	Candidates have 5 years from the date of completion of their first eligible Breast Imaging pre-requisite course to complete all remaining requirements of this certificate program.
	The Verification of Experience is part of the SCC, and it is signed by your supervisor/manager before or during the completion of your clinical competencies. This is not a prior experience pre-requisite form. The candidate must practice Breast Imaging (screening) for at least 16 weeks (or 80 full time shifts) within an 18-month block within the five-year timeframe of the certificate program. This clinical experience may only be acquired as a certified medical radiation technologist practicing in breast imaging.
	Once registered in the certificate program, the candidate may begin working on their SCC. The SCC must be completed within 3 years of the date of first clinical entry.
	The CBIS requires the candidate to be practicing in mammography under the supervision of a clinical advisor where they must: perform a minimum of 750 mammograms (2 view bilateral, CC, MLO); complete specialized competencies (mandatory and elective), while being assessed by a Clinical Advisor.
	Breast Cancer: An Overview Quick Self Study can be completed before or during the CBIS program but must be no more than 5 years old at the time of the Summary of Clinical Competence (SCC) submission.

Upon confirmed registration into this program, the Summary of Clinical Competence (SCC) will be made available to the candidate in their personal profile on the CAMRT website.

SCC SUBMISSION IS THE FINAL STEP OF YOUR CBIS

Didactic Component

The didactic/coursework requirement for the CBIS is Breast Cancer: An Overview (Quick Self Study):

- Candidates registered into the CBIS must complete this Quick Self Study prior to their program end date.
- This didactic requirement must be no more than 5 years old at the time the Summary of Clinical Competence (SCC) is submitted for review.
- A mark of 75% or higher is required on the post quiz.
- Full course policies are shared upon registration.

Clinical Component

The **Summary of Clinical Competence (SCC)** is a list of procedures and associated competencies that must be assessed by a clinical advisor and/or delegated assessors. This represents the clinical component of the certificate program. **Only competencies performed *after* program registration will be accepted in the SCC.**

The clinical component is a practicum in breast imaging that requires the candidate to be practicing in breast imaging under the supervision of an eligible CA and complete competencies under the following conditions within three years of the date of the first clinical entry. The candidate must:

- Perform a minimum of 750 mammograms (2 view bilateral, CC, MLO; any standard 4-view exam (RCC, LCC, LMLO, RMLO) exam is accepted - No MLs, XCCs, post mastectomy views)
- Complete the competencies outlined in the Summary of Clinical Competence (SCC)
- The SCC also requires that candidates complete an experience requirement:
    - To ensure consistency in clinical experience, the candidate must practice Breast Imaging (screening) for at least 16 weeks (or 80 full time shifts) within an 18-month block within the five-year timeframe of the certificate program. This clinical experience may only be acquired as a certified medical radiation technologist practicing in breast imaging.
    - The Verification of Experience is part of the SCC, and it is signed by your supervisor/manager before or during the completion of your clinical competencies. This is not a prerequisite to the program.
    - Please ensure that you include a full start and end date (day, month, year) for the experience beginning and being achieved on the experience form.

Candidates must be able to perform all breast imaging procedures as listed in this Handbook.

The candidate is responsible for ensuring that all sections of the Summary are complete. A resubmission fee will apply for any incomplete submission, including any outstanding didactic requirements.

Format of the Summary of Clinical Competence (SCC)

Candidates must be able to perform ALL breast imaging procedures listed below. The CA must witness these studies to review the candidate's interaction with the patient, correct room preparation and cleanliness, and use of proper positioning skills. You must retain a record (or have access to a record) of the completion of all mandatory competencies in case of audit.

The CA and/or DA will observe and assess each procedure/competency and sign/date the Summary of Clinical Competence (SCC) on the date the competency has been verified and confirmed. The **module** sign-off and date must be completed by your CA and must represent the date by which all competencies in that module have been verified and completed.

Dates and signatures must be full (no initials, please make the date, month and year clearly identifiable) and in "ink" (digital signatures are not accepted at this time).

After submission, the SCC is reviewed by the Breast Imaging Committee or a Committee member. If the SCC is deemed incomplete by a reviewer, it will be subject to a resubmission fee. This includes any outstanding requirement for both didactic and clinical components (including required narratives).

Audits will be conducted at the Committee's discretion to ensure the proper process has been followed. Approximately 10% (or higher).

The following provides an overview of the requirements in the SCC:

- Demographic information
- Identification of Clinical Advisor (CA) and Delegated Assessors (DA)
- Verification of practice in mammography
- Verification of Experience form
- Guidelines for performance of quality control procedures
- Log for the purpose of documenting quality control (QC) procedures
    - ACR/Accreditation Phantom test
    - Compression test
    - Repeat analysis procedure
    - Mechanical / visual inspection
    - Contrast-to-Noise Ratio / Signal-to-Noise Ratio (CNR / SNR)
    - Full (flat) field artifact test
    - Monitor QC for reading/review workstation
    - Monitor QC for acquisition workstation
    - Digital breast tomosynthesis (DBT /tomo) QC (*if site does tomo*)
- Guidelines for the assessment of competency in the performance of breast imaging (screening) procedures and image evaluation to include:
    - General assessment
    - CC assessment
    - MLO assessment
    - Technical assessment

- Log for the purpose of documenting 20 bilateral mammograms (CC & MLO)
- Professional Accountability Form
- Declaration of Completion

The Clinical Advisor must witness these studies to review the:
- ***candidate's interaction with the patient***
- ***correct room preparation and cleanliness***
- ***use of proper positioning skills***

Proficiency for achievement of competency for this program is characterized as follows:

- When presented with situations, the MRT performs relevant competencies in a manner consistent with generally accepted standards and practices in the profession, independently, and within a reasonable timeframe. The MRT anticipates what outcomes to expect in a given situation, and responds appropriately, selecting and performing competencies in an informed manner.

- The MRT recognizes unusual, difficult to resolve and complex situations which may be beyond their capacity. The MRT takes appropriate and ethical steps to address these situations, which may include consulting with others, seeking supervision or mentorship, reviewing literature or documentation, or referring the situation to the appropriate healthcare professional.

Program Extensions

Extensions beyond the five-year time frame are available but are not automatically granted. Please contact specialtycertificates@camrt.ca prior to the program end date for information regarding extension requests.

There is a fee associated with extension requests. Extensions are not guaranteed. You can view your program end date in your Portal.

Submission of Summary of Clinical Competence

Candidates must submit the completed Summary of Clinical Competence to the CAMRT for review and approval by the CBI Committee. Electronic copies submitted as one PDF file will be accepted to < specialtycertificates@camrt.ca >.

Candidates do not need to submit marks or completion letters for CAMRT courses.

A Summary of Clinical Competence deemed incomplete will be subject to a resubmission fee. This includes any outstanding (or incomplete) program requirement – didactic or clinical.

Continuing Education Recommendation

Consistent with best practice and continuous learning principles, CAMRT encourages and advocates that those who earn the CBIS designation demonstrate continuing competence in their field.

APPENDIX A

INTERNATIONALLY EDUCATED MEDICAL RADIATION TECHNOLOGISTS

CERTIFICATE PROGRAM REGISTRATION ATTESTATION STATEMENT

Included with this signed statement, is the required documentation to finalize my Certificate Program Application with the Canadian Association of Medical Radiation Technologists.

Candidate Name: _____

Certificate Program: _____

Title of Program Completed: _____

Name of Diploma/Degree: _____

Educational Institution for theoretical instruction: _____

Institution for Clinical Training: _____

Length of Total Program: Theoretical (months) _____ **Clinical (months)** _____

By signing below, I verify that:

- ✓ All statements and documentation in this application are accurate. I understand that a false or misleading statement, omission or misrepresentation may compromise my registration request.
- ✓ The documentation attached regarding my education program and/or my clinical advisor is original and has not been modified in any way.
- ✓ I authorize CAMRT to contact any authority, institution, association, body or person in any jurisdiction to verify the statements in my application and related documents.
- ✓ I understand that I may be required to submit further information if required.

_____ _____

Signature of Applicant Date (month/day/year)

APPENDIX B

Course Objectives

Breast Imaging 1

- Describe breast embryology
- Explain breast physiology and breast changes that occur in the lifetime of a woman
- Identify gross surface anatomy of the breast
- Identify surrounding structures
- Describe anatomical structures within the breast
- Describe histology of the female breast
- Describe the male breast
- Identify breast pathologies that occur in males
- Outline standard mammographic positions; the craniocaudal and mediolateral views
- Describe patient positioning of the craniocaudal and mediolateral views
- Identify positioning errors and corrective measures
- Specify supplemental views and when they are required
- Describe patient positioning of supplemental views
- Describe the technique when imaging breast implants
- Explain the rational for breast compression and its effect of the image
- List alternate methods for obtaining high-quality images on difficult to position patients
- Describe how patient compliance affects positioning and images obtained
- Identify how variations in body habitus and breast shape can affect imaging
- Describe safe ergonomics and body mechanics for the technologist
- Identify breast anatomy seen on a mammogram
- Discuss patient care in the mammographic setting
- Explain the technical factors used in mammography and why they are specific to breast imaging
- Identify cultural considerations in terms of being sensitive to a patient's needs and beliefs
- Describe how optimal exposure factors affect the digital image
- Describe efforts being made to increase mammographic screening within the Indigenous community
- Identify the relationship between technical factors used and patient dose
- Explain mammographic imaging of the gender diverse community
- Describe radiation protection in mammography
- Summarize the organized approach to breast imaging
- State the function of the Canadian Task Force on Preventive Health Care
- Identify the guidelines for breast screening set out by the Canadian Task Force
- Identify the CAR recommendations for breast imaging
- Explain the difference between guidelines and recommendations

- Describe the technologist's role in obtaining high-quality and diagnostic mammography
- List educational requirements for technologists to perform mammography in Canada
- Identify the purpose of the Mammography Accreditation Program set out by the CAR
- Describe how participation in the Mammography Accreditation Program (MAP) benefits the technologist
- Compare screening and diagnostic protocols
- Identify differences when imaging symptomatic and asymptomatic mammography patients
- Explain the risks and benefits of screening for breast cancer
- Explain breast cancer screening and the rationale behind it
- Describe what a breast screening program is
- Identify participants eligible for provincial breast screening programs
- Identify outcomes from breast screening programs
- Identify the reason(s) screening for breast cancer is considered by some to be controversial
- Describe how the screening controversy can impact patients
- Identify the eight population-based breast screening trials that were instrumental in demonstrating the efficacy of mammography
- Describe the Digital Mammographic Imaging Screening Trial (DMIST) study and its results
- Identify breast cancer statistics in Canada
- Identify breast cancer risk factors:
    - Uncontrollable risk factors
    - Controllable risk factors
- Identify percentages of breast cancer occurrences by their location in the breast
- Describe different types of breast cancer:
    - DCIS
    - Invasive ductal carcinoma
    - Tubular carcinoma
    - Mucinous or colloid carcinoma
    - Papillary carcinoma
    - Medullary carcinoma
    - Cribriform carcinoma
    - LCIS
    - Invasive lobular carcinoma
    - Inflammatory breast cancer
    - Paget's disease of the nipple
- Describe how breast cancer can be diagnosed
- Describe breast cancer staging and grading
- Describe surgical interventions for breast cancer:

    - Lumpectomy
    - Mastectomy
    - Sentinel node biopsy
    - Axillary node dissection
    - Prophylactic mastectomy
- Outline breast cancer treatments:
    - Neoadjuvant therapy
    - Adjuvant Therapy
    - Chemotherapy
    - Endocrine Therapy
    - Targeted Therapy
- Describe types of breast reconstruction available to patients
- Describe the purpose of post-breast cancer screening including:
    - Benefits
    - Recommendations

Breast Imaging 2

Explain direct digital breast imaging equipment

- Explain components of a full-field digital mammography (FFDM) system
    - X-ray tube
    - Target
    - Filtration
    - Collimators
    - C-arm gantry
    - Face plate
    - Compression paddle
    - Grids
    - Automatic exposure control
    - Detectors
    - Analog to digital converter
    - Control panel
    - Technologist workstation
    - Radiologist review station
- Explain features of a full-field digital mammography (FFDM) system
    - Workflow
    - Information Systems: RIS/MIS/HIS
    - Process
    - Pre-processing/algorithms
    - Post-processing
    - Picture Archiving and Communication System (PACS)
    - Health Level 7 (HL7)
    - Digital Imaging and Communications in Medicine (DICOM)

    - Image storage
- Explain computer aided detection (CAD)
- Explain factors that affect image quality
    - Spatial resolution (detail)
    - Contrast
    - Development of image artifacts
- Explain dose limits and dose reduction
- Explain exposure index values
- Explain digital breast tomosynthesis

Explain the importance and process of quality control (QC) procedures for mammography

- Daily QC procedures
    - Equipment warm-up, if recommended by manufacturer
    - Meter operation
    - Equipment condition
    - Cleanliness of electronic display devices and assessment of viewing conditions
    - Overall visual assessment of electronic display devices
- Weekly QC procedures
    - Visual inspection and cleanliness of imaging systems
    - Imaging quality evaluation with phantom for optical density and absence of artifacts
    - Digital image quality evaluation with phantom, looking for test objects embedded therein
    - Electronic display device performance
    - Compression centimetre test
- Monthly QC procedures
    - Mechanical, electrical and overall safety inspection
    - Extended full-field artifacts evaluation
- Quarterly QC procedures
    - Repeat analysis
    - Reject analysis
- Semi-annual QC procedures
    - Breast compression (force) device
- Annual QC procedures (physicist)
    - Accuracy of tube voltage
    - Reproducibility of tube voltage
    - Radiation output (air kerma) reproducibility and linearity
    - Normalized radiation output
    - X-ray beam filtration
    - Collimation/ beam limiting device
    - Light field and x-ray field alignment
    - Automatic exposure control (AEC)
    - Response function

    - Noise evaluation
    - Image homogeneity and artifact assessment
    - Ghosting
    - Image quality for contrast, detail and artifacts
    - Dosimetry
    - Electronic display device performance
    - General preventive maintenance

Explain QC procedures for Digital Breast Tomosynthesis

- Digital image quality evaluation with phantom
- Geometry calibration

Explain quality assurance (QA) procedures

- Purpose
- Process
- Audit

Explain the CAR Mammography Accreditation Program

Discuss contrast-enhanced digital mammography (DM)

Discuss ultrasound imaging

- Colour Doppler
- Therapeutic ultrasound
- Elastography
- Automated breast ultrasound

Discuss MRI

- Diffusion weighted imaging
- Spectroscopy

Discuss PET and PET/CT

Discuss SPECT and SPECT/CT

- Scintimammography
- Lymphoscintigraphy
- Bone scintigraphy

Discuss experimental techniques for breast imaging

- Mammography-ultrasound fusion
- Cone beam CT
- Methods using light
    - Transillumination
    - Optical imaging/ optical spectroscopy/
    - CT laser mammography
    - Digital optical breast imaging (DOBI)
- Thermography
- Methods measuring electrical impulses
    - Electrical potential measurements
    - Electrical impedance imaging

Microwave imaging

Perform basic interpretation and critique of mammographic images for benign and malignant lesions

- Breast asymmetry/architectural distortion
- Breast masses
- Breast calcifications
- Skin changes
- Nipple changes and discharge
- Lymphadenopathy
- Other changes

Explain the BI-RADS system

Explain breast density classification

- Automated breast density assessment software

Explain where breast cancer comes from

Identify and explain basic pathology

- Cyst
- Fibroadenoma
- Lactational or lactating adenoma
- Hamartoma
- Fat necrosis and oil cysts
- Abscess
- Duct ectasia
- Intraductal papilloma
- Sclerosing adenosis
- Radial scar
- Phyllodes tumour
- Paget's disease
- Pseudoangiomatous stromal hyperplasia
- Atypical ductal hyperplasia
- Ductal carcinoma in situ
- Invasive ductal carcinoma
- Atypical lobular hyperplasia
- Lobular carcinoma in situ
- Invasive lobular carcinoma
- Invasive mixed carcinoma
- Inflammatory breast cancer
- Metastatic breast cancer
- Juvenile breast carcinoma
- Lymph nodes
- Conditions of the male breast

Explain factors pertaining to diagnostic imaging

- Breast changes/ signs and symptoms
- Breast exam
- Clinical history
- Diagnostic imaging
    - Lateral
    - Nipple views

    - Extended or exaggerated CC
    - Spot compression
    - Magnification
    - Rolled
    - Tangential
    - Cleavage
    - Axillary tail
    - Elevated craniocaudal
    - From below caudocranial

Explain procedures and issues with imaging the mastectomy site
Explain triangulation/localization methods
Explain interventional procedures of the breast

- Galactography
- Cyst aspiration
- Abscess drainage
- Biopsies
    - Fine needle aspiration
    - Core biopsy
    - Vacuum assisted biopsy
    - Clip placement
    - Specimen radiography
- Preoperative localizations
    - Needle wire localizations
    - Radioactive seed localization
    - Other localization methods
- Sentinel node biopsy
- Excisional/incisional biopsy
- Ablation and other non-surgical tissue removal techniques

Breast Cancer

- Identify the recent statistics and risk factors related to breast cancer
- Describe the anatomical location of the breast, surrounding anatomy, and the possible routes of spread of breast cancer
- List the common signs and symptoms of this disease
- Describe the tests needed to accurately determine the stage of the disease
- Discuss the treatment options available for patients of different stages
- Identify and dispel some common myths about breast cancer
- Understand the psychosocial needs of a patient with breast cancer and identify services available to support them

APPENDIX C

Breast Imaging 1 Exam Blueprint

Item presentation - % of question types	
Multiple Choice: 100%	
Exam structure	
Exam length: 2:0 hours Number of questions: 100	
Exam delivery format	
On-line	
Course Content and question weighting	
Chapters	**Percentage weighting of number of questions/chapters**
1 – Breast Anatomy	16-20%
2 – Mammographic Positioning	24-28%
3 – Patient Care in Mammography	11-14%
4 – Organized Approach to Breast Imaging	4-8%
5 – Breast Cancer Screening	11-15%
6 – Breast Cancer	24-28%

Breast Imaging 2 Exam Blueprint

Item presentation - % of question types	
Multiple Choice: 100%	
Exam structure	
Exam length: 2:0 hours Number of questions: 100	
Exam delivery format	
On-line	
Course Content and question weighting	
Chapters	**Percentage weighting of number of questions/chapters**
1 – Mammographic and Digital Breast Tomosynthesis Equipment	12-15%
2 – Quality Control / Quality Assurance with Mammographic and Digital Breast Tomosynthesis Equipment	12-15%
3 – Adjunctive Breast Imaging Modalities	12-15%
4 – Differentiation of Benign and Malignant Breast Abnormalities	17-21%
5 – Basic Breast Pathology	17-21%
6 – Diagnostic Imaging and Interventional Procedures of the Breast	17-21%

APPENDIX D

RESOURCES

Following is a list of texts and other resource material that may be of benefit to practicing mammographers.

Textbooks

Cardenosa, Gilda
Breast Imaging Companion, 3rd and 4th editions
Lippincott, Williams & Wilkins, 2007/2017, ISBN 9780781764919 / 9781496314963

De Parades, Ellen Shaw
Atlas of Mammography 3rd edition
Lippincott William & Wilkins, 2007, ISBN 978 0787164339

Dutton A.G., Linn-Watson, T., Torres, Lillian
Torres' Patient Care in Imaging Technology, **9th edition**
Lippincott Williams & Wilkins, 2018, ISBN 1496378660

Lillé, Shelly; Marshall, Wendy
Mammographic Imaging *A Practical Guide* 4th ed
Wolters Kluwer 2018 ISBN 9781496352026

Websites

Canadian Association of Radiologists
(CAR) Practice Guidelines and Technical Standards for Breast Imaging and Intervention
https://car.ca/wp-content/uploads/Breast-Imaging-and-Intervention-2016.pdf

Canadian Breast Cancer Foundation
http://www.cbcf.org/ontario/AboutBreastCancerMain/FactsStats/Pages/default.aspx

Decision for Breast Screening in Canada
https://canadiantaskforce.ca/?s=breast+screening&search-type=default

Safety Code 36: Radiation Protection and Quality Standards in Mammography – Safety Procedures for the Installation, Use and Control of Mammographic X-ray Equipment
http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/safety-code_36-securite/index-eng.php

APPENDIX E

The Role of a Clinical Advisor

To maintain the integrity of CAMRT Certificate programs, it is essential that all parties involved in the training and evaluation of certificate program candidates follow the procedures set out in the Program Handbook and Summary of Clinical Competence (SCC). A CAMRT Certificate indicates a level of competence above entry-to-practice that has been verified through the requirements of the program.

Clinical Advisor's responsibilities include:

- review the Program Handbook and SCC with the candidate.
- mentor and support candidates in their skill development
- assess firsthand competency/procedures performed by the candidate and verify competence by signing and dating each procedure in the SCC at the time competence is established and/or
- delegate assessment duties to individuals who have the expertise and qualifications outlined in the Program Handbook.
- ensure all delegated assessors have read the most current version of the Program Handbook and SCC. These documents are updated on an annual basis, so clinical advisors and delegated assessors must review the handbook and SCC with each new candidate.
- attest to overall competency by signing at the end of each module
- verify the overall competence of the candidate at the end of the clinical placement by signing the Declaration of Completion.

During clinical placements, the following criteria must be upheld:

All competencies must be **performed** independently by the candidate on a patient. A candidate cannot be deemed competent if they have only observed or simulated a procedure, unless otherwise indicated in the SCC.

The clinical advisor/delegated assessor must witness competent practice for a procedure/competency multiple times prior to the date of the final assessment. A signature in the SCC verifies that the technologist has **consistently shown** they have the knowledge, skill and judgement to be declared competent in each aspect of practice. It is recognized in some circumstances that procedures are not performed frequently; however, it is appreciated that there is a transference of skills between many procedures. ***It is the responsibility of the clinical advisor or delegated assessor to ensure this expected level of competence as evidenced by their signatures in the appropriate areas.***

If there are procedures in the SCC that are not performed at your clinical site it is the responsibility of the candidate to contact CAMRT to determine an alternate option (if any).

Detailed guidelines for assessment of competency are found in each module of the SCC. The guidelines listed provide an overview of the expectation for assessment by the clinical advisor or delegated assessor.

It is recognized being a clinical advisor or delegated assessor adds to your already heavy workload and responsibilities in your daily practice. The CAMRT appreciates your professionalism and commitment to help the candidate continue their education in an ever-changing healthcare environment.

APPENDIX F

Internationally Educated Medical Radiation Technologist Clinical Advisor Verification of Experience

Hospital/Organization: _____

Name of Supervisor: _____

Supervisor Credential(s): _____

Supervisor Email: _____

NAME OF CBIS CANDIDATE: _____

To CAMRT Certificate Programs:

This is to confirm _____ (name of Clinical Advisor) is a current employee of the above noted hospital/organization.

The Clinical Advisor listed above is:

- A registered medical radiation technologist with a minimum of five years' experience in the practice of mammography
- Currently practicing in mammography

My signature below confirms the above meets the CAMRT's eligibility requirement to act in a Clinical Advisor (CA) role for the purpose of the Certificate in Breast Imaging – Screening (CBIS) program.

The affixed hospital seal confirms the authenticity of this submission.

_____ _____

Signature of Clinical Advisor Supervisor/Employer **Date**

APPENDIX G

Clinical Advisor (CA) Check List

To maintain the integrity of CAMRT Certificate programs, it is essential all parties involved in the training and evaluation of certificate program candidates follow the procedures set out in the Program Handbook and Summary of Clinical Competence (SCC). A CAMRT Certificate indicates a level of competence above entry-to-practice that has been verified through the requirements of the program. As such, CAMRT must ensure all Clinical Advisors meet the same standards and are eligible to take on this assessment role.

This form must be submitted to the CAMRT along with the notarized documentation required for all internationally educated medical radiation technologists.

I, _____, acknowledge by my initials, the following to be true.

	I am a medical radiation technologist* with a CAMRT CBI credential **OR**** a medical radiation technologist having a minimum of five years' experience in the practice of mammography **or other:* _____
	I am **currently practicing** in mammography.
	I am not currently registered in any of the CAMRT Breast Imaging Certificate programs.
	I have no conflicts of interest* with the CBIS candidate. ***Conflicts of interest may include:** • Close personal relationships that could threaten independence or objectivity during assessments • Spouse or family member • A direct report (i.e. the assessor reports to the candidate)

I understand that any false or misleading statement, omission or misrepresentation may result in the candidate's automatic withdrawal from the program and/or revocation of the CBIS designation.

_____ _____

Clinical Advisor Signature Date