TRUE NORTH IMAGING POLICY AND PROCEDURES MANUAL

ACKNOWLEDGEMENT

I acknowledge the updates and changes made to the Policy and Procedures Manual

Quality Advisor: Alex Hartman **Licensee:** Jason Hartman

Dr. Alex Hartman **Dr. Jason Hartman**

PACS Administrator: Duane Lopes **Mammography Leads:** Sharon Shin/Tze Chia

Duane Lopes **Dr. Sharon Shin/Dr. Tze Chia**

All Staff members are required to read and review each section outlined in the Policy and Procedure Manual annually and as updates become available.

EMPLOYEES NAMES (PRINT NAME)	EMPLOYEES SIGNATURE *I have read and understand the protocols and procedures outlined.*	DATE
1.		
2.		
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EMPLOYEE MANUAL

MISSION STATEMENT

“COMMITMENT TO EXCELLENCE”

GOALS AND OBJECTIVES

At True North Imaging our goal is to provide the best quality service to our referring physicians as well as exceptional care to our patients. We commit to use our skills and resources to benefit the communities we serve by providing the finest in diagnostic imaging.

We strive to be the best diagnostic imaging provider in all of Ontario. We understand the importance of maintaining up to date, state of the art imaging equipment and commit to continually improve our program and skills through learning and innovation.

STATEMENT OF POLICY

Employee policies contained in this document will be applied to every employee uniformly.

QUALITY MANAGEMENT SYSTEM

True North Imaging has created a quality management system to ensure that all services meet the regulatory requirements, the needs of the patients and all personnel responsibilities, and to support continuous improvement in our services.

This is being accomplished through:

- Quality Control testing - performed by techs, results sent to lead technologists who inform management of any concerns or occurrences
- Investigation by management of nonconformities, including adverse occurrences, discordant quality assurance results, clerical errors, staff complaints and patient complaints - management will investigate and ensure that immediate action is taken to correct situations in a timely manner, and all will be documented. Management will monitor results to ensure the corrective actions taken were effective. When a patient examination is affected by a nonconformity, the exam will be stopped immediately and the report will be held until resolved. (see **Appendix A** for nonconformity form)
- Quality Advisor clinic visits (see **Appendix B** for visitation log)
- Patient surveys, physician surveys and patient SMS messages to patients for examination/experience feedback
- encouraging staff to make suggestions for improvement
- investigating and responding to patient complaints
- conducting periodic management review of the documents and records of the quality management system
- Quality Assurance Meetings
- Health & Safety Meetings

POLICY & PROCEDURE MANUAL

The Policy and Procedures manual is to be reviewed and/or updated annually and/or as required. The Policy and Procedures Manual will be signed off and approved by the Quality Advisor and the Licensee prior to being issued to staff.

The manual will be reviewed and/or updated by the QA Committee consisting of:

- Quality Assurance Advisor
- Licensee
- VP Operations
- DMS
- PACS Administrator
- Medical Director
- QA Radiologist
- Regional Managers
- MRT

Any documents that are updated, replaced or obsolete will be removed from all clinics and only the current authorized versions will be available. The most recent or up to date version of the Policy & Procedure manual can be found on our Portal which will include all updated documents. Obsolete documents will be retained for 6 months and will be appropriately marked as “No longer in use”

Appendix A **TRUE NORTH IMAGING**

Nonconformity Form

Date:	**Patient ID: (when relevant)**	
Date & time of event (where relevant)		
Description of nonconformity:		
Reported by:		
What actions were taken:		
Resolved by:		
Analysis of Extent of the Problem		
Is there a documented process? Was it followed?	**YES** □	**NO** □
Risk Rating of nonconformity using severity/probability:		
Case closed with immediate action only?	**YES** □	**NO** □
Supervisory signature and date (if case closed):		
Cause Analysis		
Process(es) that originated the problem:		
Is the process clearly defined? (if no, list as a cause)	**YES** □	**NO** □
Is the process fully understood by all involved? (if no, list as a cause)	**YES** □	**NO** □
Are there obstacles within the process? (if yes, list obstacles under "cause")	**YES** □	**NO** □
Do quality indicators show that the process is flawed, or is there no means to measure this process? (if yes, list as a cause)	**YES** □	**NO** □
Cause(s)		
Is disclosure of harm necessary?	**YES** □	**NO** □
Responsibilities:		
Timeline for completion:		
Verification of effectiveness of corrective action		
Have the actions been completed?	**YES** □	**NO** □
Are staff aware of and knowledgeable about the changes?	**YES** □	**NO** □
Have outcomes improved?	**YES** □	**NO** □
Has the problem been resolved? (i.e. it has not recurred)	**YES** □	**NO** □
If no to any of the above, create new case or define further action to be taken:		
Objective evidence of verification:		
Supervisory Signature and date		

Appendix B

QUALITY ADVISOR VISITATION LOG

DATE	SIGNATURE	COMMENTS

**** Please note that the QA will visit at least 4 times per year, visits will be scheduled ****

SECURITY AND CONFIDENTIALITY

The ONLY persons permitted on clinic premises are employees or representatives of True North Imaging, referring physicians and their patients.

All exam rooms must be labeled with a DO NOT ENTER – EXAM IN PROGRESS sign, to restrict access to the patient exam room while the procedure is in progress.
Although we do not encourage or immediately invite family members/partners into the exam room, patients have the right to ask for support should they request it. This will be particularly true for pediatric, elderly, disabled or patients requiring translation services. Staff should always do their best to accommodate the needs of the patients. Should the patient request a chaperone and have not brought a friend or family member with them, another member of staff can accompany them into the exam room.

In the case of obstetrical ultrasounds if the patient does not require a chaperone but requests family/friends presence during the ultrasound, please inform them that family/friends will be invited in at the end of the examination.

For more information relating to privacy, please read the **Privacy Policy document.**
Salespersons representing suppliers of goods and/or services should be referred to the Head Office.

Any accidents in the clinic, resulting in personal or property damage, must be reported immediately to the area supervisor. Incident Reports must be completed by anyone directly involved in the accident and by any witnesses. The original copy is to be kept on-site in a designated area and a copy sent to the head office supervisor and the immediate supervisor.

PEOPLE-CENTERED CARE PRINCIPLES:
True North Imaging has adopted the people-centered care principles in which we created a culture of engagement and collaboration where patients, health care providers and staff are active partners in improving the diagnostic imaging experience and health outcomes. We do this by collecting patient and physician surveys, encouraging staff to provide feedback and suggestions, send patient experience requests to each patient via SMS message, respond to patient complaints, compose incident reports and share information on our website and postings throughout the office. Management compiles the surveys, staff feedback and patient experiences and uses this information to improve patient experience.

RESPECTING THE RIGHTS OF PATIENTS AND ESSENTIAL CAREGIVERS:
In accordance with Ontario's Bill 212-Connecting Care Amendment Act (Patient Bill of Rights) all patients have the right to be treated with respect, and in a courteous, dignified manner and to be free from mental, physical and financial abuse. We must respect patients' privacy at all times. We must recognize the patient's individuality and preferences based on ethnic, spiritual, linguistic, familial and cultural factors. All patients have the right to information about the provided service and to be told who will be performing the service. A patient has the right to give or refuse consent, or if the patient is incapable of making their own decisions has the right to a substitute decision maker.

Patients have the right to raise concerns or recommend changes in connection with policies that affect their interests to the person performing the examination, to management, government officials or any other person, without fear of interference, coercion, discrimination or reprisal. Patients have the right to be informed of the laws, rules and policies affecting the operation of the health service provided and to be informed in writing of the procedures for initiating complaints about the health care provider. Patients have the right to be informed of the person or organizations that are providing them with the health service.
Patients have the right to have their records kept confidential in accordance with the law and to know to whom their personal health information has been disclosed. Patients are also entitled to access their health records and that those health records are available without any unreasonable delay or cost.
Patients have the right to designate another person as their essential caregiver, to have access to that caregiver at any time throughout their exam, and to have that caregiver treated with respect as a valuable contributor to the care team.

DISCLOSURE OF HARM:
At True North Imaging, we are committed to ensuring the safety and the rights of our patients. Therefore, it is our obligation as an organization to ensure that harm, harmful incidents, no-harm incidents and near miss incidents are disclosed directly to the affected patients or the patient's substitute decision-maker, as well as the patient's primary care physician as soon as possible after the incident occurs.

Harm: an outcome that negatively affects a patient's health or quality of life. Harm may or may not relate to material risks discussed during the informed consent process.

Harmful incident: an incident that has resulted in harm to the patient (also known as an "adverse event")

No-harm incident: an incident with the potential for harm that reached the patient, but no discernible or clinically apparent harm has resulted.

Near miss incident: an incident with the potential for harm that did not reach the patient due to timely intervention or good fortune (also known as a "close call").

It is our obligation to disclose the facts of what occurred including the following:

- a description of the cause(s) of the incident
- any consequences for the patient, as they be known
- actions that have been taken to address the consequences to the patient
- steps the patient can take to monitor for potential consequences
- options for follow up care
- actions being taken to avoid or reduce risk of incident recurring
- who the patient may contact for further information
- sincere apology to the patient

ACCESS TO REPORTS AND IMAGES:
All patients have the right to information about the healthcare service provided to the patient, therefore, if a patient requests a copy of their report or images it must be provided to the patient. The patient can either access this information through "PocketHealth" or they can be provided a copy, free of charge, via cd.

SUPPORT WORKERS/ESSENTIAL CAREGIVERS
All patients have the right to have a Support Worker accompany them to our facilities. A Support worker can be a support person or service animal. I.e.: Guide dog

Guide Dogs & Other Service Animals Protocol
Under the Independent Health Facilities Act (IHFA) all IHFs are required to comply with all applicable legislation. In Ontario, the applicable legislation related to the rights of patients with respect to their guide dogs are listed below. All staff are required to be familiar with the content of each legislation for a better understanding of the rights of patients with their guide dogs.

1. Blind Persons' Rights Act
2. Ontario Human Rights Code
3. AODA (Accessibility for Ontarians with Disabilities Act)

A) About Guide Dogs
What do guide dogs do?

Guide dogs are among the most highly trained dogs in the world, performing tasks that require intensive standardized training, and are specifically trained to assist someone who is blind or partially sighted with mobility. Guide dogs are the only service dogs trained to disobey their handler's command if it will put their handler at risk. The safety of their handler is the guide dog's number-one priority.

The guide dog's harness and U-shaped handle facilitate communication between the dog and their handler. In this partnership, the person provides directional commands and the dog ensures the team's safety.

Guide dogs are not pets. They do serious work.

B) Other Working Dogs
Service, therapy and emotional support animals

There is still much confusion surrounding the differences between guide dogs, service dogs, therapy dogs and emotional support animals – particularly about the rights and legislation that protect them.

Service dogs are specifically trained to assist a person with a disability and perform specific tasks that mitigate the disability. Both guide dogs and service dogs are protected under human rights legislation across Canada.

Therapy dogs receive some training to provide psychological or physiological comfort to people in different situations. Emotional support animals receive no specific training and are companion animals that provide comfort to people.

C) Legislation
Guide dog legislation across Canada

In all of Canada's 10 provinces and three territories, legislation prohibits discriminating against a person with a disability who is working with a guide dog. Discrimination includes denial of access to any premises to which the public would normally have access.

Despite it being illegal to deny access or refuse service, it happens every day – especially in taxis, restaurants, hotels and stores. The CNIB Foundation is asking businesses to open their doors to Canadians with guide dogs. Not only is it the right thing to do, but it's also the law.

For more information about specific legislation that protects guide dog teams in your province or who to contact in the event you are discriminated against, please visit cnib.ca/en/programs-and-services/live/cnib-guide-dogs/guide-dog-legislation.

D) Rights & Responsibilities
Business owners cannot deny access or refuse service to guide dog teams.

If a guide dog's behavior is inappropriate, the clinic staff has the right to ask the guide dog handler to leave. Inappropriate behavior generally means the guide dog is not under the handler's control (such as barking after being told not to or jumping up).

It is unacceptable to ask for proof that a dog is a guide dog, unless it is behaving inappropriately. It is best practice to assume the guide dog is a qualified guide dog, unless given reason to think otherwise. When competing rights are an issue – such as allergies – a compromise needs to be made to maintain the rights of everyone involved.
https://cnib.ca/en/programs-and-services/live/cnib-guide-dogs/support-cnib-guide-dogs/become-guide-dog-champion/rights?region=gta

E) Guide Dog Etiquette
If a patient arrives at the clinic with a guide dog, please follow proper guide dog etiquette to ensure the safety of the guide dog team:

- Avoid talking to or interacting with the guide dog.
- Do not pet, feed or distract the guide dog, as it can potentially affect its training. When the guide dog is not in harness, you may ask the handler if it's okay to pet the dog.
- If you own a pet dog, please keep it on a leash and under control in the community. When approaching a guide dog team with your dog, clearly notify the handler and say, "I'm passing on your left and I have a dog with me."

CONFIDENTIALITY & PATIENT COMMUNICATIONS

Information concerning patient records, condition, referring physicians, the nature and status of the clinic or the company, are strictly confidential and must not be divulged to any persons other than the referring physician and any True North Imaging physician. This policy extends to conversations with the patient.

It is to be expected that some patients will ask the technologist medically-related questions. It is of paramount importance that no technologist is ever to discuss any findings with a patient as a technologist is not qualified to render a diagnosis. **A medical diagnosis will only be formed by the referring physician and all communications to the patient regarding the diagnosis will be made by the referring physician.**

In regards to fetal gender, True North Imaging considers gender an identification of anatomy and NOT a diagnosis, therefore it is appropriate to reveal gender to the patient if the referring physician states such on the requisition or if there is a standing order from that physician.

It is impossible to ascertain the relevance of an imaging exam to the clinical diagnosis without knowing and considering the patient's full medical history which is not available to the technologists or radiologists. **Any breach of this policy will result in immediate dismissal.**

All employees, at the time of employment, are required to read and sign the "True North Imaging Employee Confidentiality Agreement" (attached in Appendix A)

PROBATIONARY PERIOD

a. All employees will be hired with a probationary period of 3 months.
b. There will be a review of job performance at the end of the probationary period. The probationary period may be extended at this time, if deemed necessary.
c. During the first probationary period, employment may be terminated without advance notice or payment in lieu thereof should performance be deemed unsatisfactory.
d. A probationary employee will become a permanent employee after successful completion of the probationary period.

DRESS CODE

It is the policy of True North Imaging that each employee's dress, grooming, and personal hygiene should be appropriate to the work situation.

1. Employees MUST present a professional, businesslike image to patients and the public. Acceptable personal appearance is an ongoing requirement of employment with True North Imaging.
2. Office workers and any employees who have regular contact with the public must comply with the following personal appearance standards:
    - Employees are expected to dress in a manner that is normally acceptable in similar business establishments. Employees must not wear suggestive attire, jeans, athletic clothing, sandals, shorts, sweatshirts, hooded sweatshirts, baseball caps, and similar items of casual attire that do not present a businesslike appearance.

- We would ask that all employees do their best to cover tattoos and piercings (other than earrings) to the best of their ability.
- Clinic employees are strongly encouraged to wear scrub suits. When street clothing is worn, clothes must be business casual and a clean lab coat must be worn over their appropriate clothes. Lab coats are not required over medical uniforms. True North Imaging will supply the initial pair of medical scrubs (top and bottom) and name tag; name tags shall designate occupation. Employees are responsible for maintaining a uniform and lab coat at all times. **Name tags MUST be worn by all clinic staff at all times.** Scrub uniform sets will be available for purchase by staff at a discounted price.
- Where applicable, employees with long hair shall tie it back to keep it out of materials and moving equipment.
- Employees wearing jewelry, loose clothing, lanyards, etc., must wear it in such a way that there is no danger of the items getting caught in equipment.
- Employees who do not regularly meet the public should follow basic requirements of safety and comfort but should still be neat and businesslike as working conditions permit.

3. Any employee who does not meet the standards of this policy will be required to take corrective action, which may include leaving the premises without pay.

LANGUAGE IN THE WORKPLACE

English is the language of the workplace and is the common thread that brings us together – with each other and with our patients. We are proud of the diversity of our staff and the ability of our staff to assist our non-English speaking patients in their preferred language. Staff are strongly encouraged however to respect their co-workers and maintain English as the language of the workplace.

SOCIAL MEDIA

All employees, at the time of employment, are required to read and sign the "True North Imaging Social Media Personal Use" policy (attached in Appendix B)

SCENT REDUCTION POLICY

True North Imaging is committed to creating a healthy and safe environment in which to work. In keeping with this direction, True North Imaging is committed to reducing and where possible, eliminating, unnecessary scents, fragrances and odors from its environment.

For the general population, exposure to scents is not typically problematic, however from time to time; the presence of perfumes and other scented products can present indoor air quality concerns that may affect an individual's comfort.

***For a very small portion of the population, scented products can cause a health risk therefore*:**

a. Employees, students and visitors will be informed of these guidelines through signage, website and orientation.
b. Individuals entering our building should be encouraged to use scent-free products.

c. True North Imaging, wherever possible, should purchase “odor free” or “low odor” products.
d. Cleaning, maintenance, renovation, etc. with which an atypical odor is associated should be scheduled to occur at times of reduced occupancy, wherever possible.

Concerns should be reported to the supervisor of the area. The supervisor will make efforts to determine the source of the concerns and will take action accordingly. Parties responsible for the scent will be informed of the situation and asked to support our initiative to provide a scent reduced work environment.

ENVIRONMENTAL CONDITIONS

True North Imaging has a duty to take all measures reasonably necessary in the circumstances to protect workers from exposure to hazardous thermal conditions that may result in a heat-related illness or a worker's core body temperature exceeding **38°C (100°F)** or if the temperature is below the legal minimum of **21°C**

Each facility will be cleaned daily and be free of dust. Each facility will have been built to ensure that the humidity, sound and vibration levels have been met. Each unit will be inspected as per manufacturer guidelines to ensure they do not adversely affect the quality of examination results.

NO SMOKING/VAPING IN ANY OFFICE OR CLINIC

Under no circumstances will there be any smoking or vaping in any True North Imaging offices or clinics.

FOOD

Where a staff room/lunch room is available, this is the only place employees may consume food. The door must be kept closed at all times. Food is never to be eaten at a reception desk or work station.

In keeping with True North Imaging’s scent reduction policy, employees should be sensitive to others when preparing, warming, etc. foods that emit strong odors.

PROFESSIONAL CERTIFICATION

a. *All technologists (DMS and MRT’s) must be active members of CMRITO and in good standing in order to practice in Ontario.*
b. Copies of professional license(s) with current registration form from CMRITO) are to be kept on file at the clinic with a copy at head office. EACH technologist is responsible for maintaining up to date continuing education credits to ensure their good standing with CMRITO.
c. *Employees will maintain current registration annually and are responsible for their own professional dues and CME requirements.*

CONTINUING EDUCATION

a. True North Imaging supports continuing education for regular full-time employees and financial assistance may be considered if the course is clearly job related.
b. True North Imaging encourages full-time employees to attend job related conferences and seminars based on seniority and merit, allowing all employees to attend.
c. Written submissions, stating reasons for attending seminar/conference and expectations, should be submitted to the head office supervisor and/or regional

supervisor for approval. If approved, the Board will decide upon what portion of costs will be paid. We expect the employee to send an email to their supervisor stating the above points at the earliest possible time.

d. Employees who attend conferences and seminars funded by True North Imaging may be asked to present comprehensive notes on what was discussed during the seminar to the Medical Director and/or co-workers.

DMS & MRT'S IN TRAINING

Any DMS or MRT that expresses interest in a specialized field will be trained on site by a DMS or MRT that has been trained in a particular area specific to the type of patients seen in the facility. DMS or MRT that are training will be directly supervised by a licensed, certified and experienced equipment operator and will work closely with the reporting radiologist until all requirements are met.

RE-TRAINING

All employees that have been off on extended leave, changed duties, or where refreshing is indicated will work directly with a licensed, certified, experienced operator and will work closely with the reporting radiologist until all requirements are met.

USE OF CAR FOR BUSINESS TRAVELING

a. The employee is to notify their auto insurance that auto is used for business.
b. If traveling by personal automobile, True North Imaging will reimburse the employee at the current rate of 36¢ per kilometer traveled. Submit Travel Expense Report (see **Appendix C)**.
c. Distance traveled is defined as the two-way distance between base office and business destination or two-way distance between employee residence and business destination, whichever is less; employee is expected to provide a fair estimate of distance traveled.
d. Business travel is defined as travel from one office to another to complete one's duties or as specifically directed by the head office. Business travel does not include travel from an employee's home to a clinic or office, as commuting is a personal expense. The only exception occurs when an employee is asked to travel from one geographic area to another. Therefore, if an employee who usually works in clinic "A" is asked to work at clinic "B" for one or more complete business days, personal vehicle mileage or public transit fare will be reimbursed **if clinics "A" and "B" are in different geographic areas**.
e. If you are asked to travel from one office to another - even within the same geographic area - during the same business day, personal vehicle mileage or public transit fare will be reimbursed.

Geographic areas are currently defined as follows:

- Greater Metro-Toronto Area, including;
  - Etobicoke
  - Markham

    - Scarborough
    - Mississauga/Oakville
    - Thornhill
- The cities of Kitchener-Waterloo and Cambridge

BUSINESS REIMBURSEMENTS

Will be paid for pre authorized purchases. (see **Appendix D**)

COMPANY ISSUED PROPERTY POLICY

Any company issued device and/or service package used to conduct True North Imaging business remains the property of True North Imaging, and must be used responsibly, ethically, efficiently, and as intended. True North Imaging employees must take all necessary precautions to safeguard such devices issued to them against damage, loss or theft.

Employees who are issued company property (cell phones, IT related equipment, credit cards, etc.) will be required to sign an acknowledgement & agreement form. All company property must be returned at the termination of employment (Company Issued Property Policy, Appendix O).

ELECTRONIC MONITORING POLICY

True North Imaging is committed to maintaining a transparent and fair workplace. To that end, we have developed this Policy to share with you that True North Imaging does not currently engage in the electronic monitoring of its employees in Ontario. "Electronic monitoring" includes all forms of employee monitoring that is done electronically, such as using GPS systems to track employee movement, using sensors to track how quickly an employee performs a task or tracking the websites an employee visits during working hours.

Please note that True North Imaging reserves its right to change its practices and this Policy with respect to electronic monitoring at any time. Any changes will be communicated to you.

In addition, please note that True North Imaging reserves its right to review employees' activities that take place via True North Imaging systems or software, such as on employer-issued devices, from time to time, including as part of any workplace investigation. For that reason, employees must have no expectation of privacy when using True North Imaging systems and software.

If you have any questions about this Policy, please speak with your direct supervisor.

Appendix C **TRUE NORTH IMAGING**

TRAVEL EXPENSE REPORT

Name: _____ **Employee Number: _____**

DATE	FROM	TO	ROUND TRIP TOTAL
		TOTAL KM	

TRAVEL COST (_____ km x 0.36) = $ _____

Appendix D

TRUE NORTH IMAGING

BUSINESS REIMBURSEMENTS

Name: _____ Clinic: _____

SUPPLIER	DATE	DESCRIPTION	FACILITY	AMOUNT
			TOTAL	

NOTE: For pre-approved purchases only.

NEPOTISM/FAMILY MEMBERS

The primary criteria when hiring or promoting is determining the most qualified candidate for the role regardless of their relationship to any existing employee. Applicants who have relatives (defined below) currently working for True North Imaging in any capacity must disclose this information with their application. Failure to do so will automatically disqualify the individual from the recruiting process or will cause immediate termination should the information be discovered post hire.

Employees cannot work directly for/be supervised by a relative and/or will not occupy a position in the same line of authority within the organization unless pre-approved by senior management. In such cases where this working relationship exists, True North Imaging reserves the right, at any point, to transfer one of the two employees to another position within the organization.

At any point in time, if a personal conflict (between relatives) is brought into day-to-day work activities and interrupts productivity, management reserves the right to investigate the matter and apply discipline up to and including termination.

> **NOTE:** Relative includes spouses or same sex partners, parents, children, brothers, sisters, brothers and sisters-in-law, fathers and mothers-in-law, step-parents, step-siblings, step-children, aunts, uncles, spouses' parent, foster parent, grandparent, grand-child or step-child.

HARASSMENT

True North Imaging is committed to ensuring a workplace free of personal interference of any nature. E.g.: sexual harassment.

If an employee believes they are being harassed by anyone in the context of the workplace, we firmly believe that they must make a complaint to the regional supervisor and head office supervisor. It will be investigated quickly and fairly on an individual basis and appropriate actions will be taken.

For additional information please read True North Imaging's Professional Conduct Policy and Procedure document (attached in Appendix C) or review the "Workplace Violence and Harassment" policy document posted in all True North Imaging locations.

STATUTORY HOLIDAYS

Employees, earn wages on at least twelve days during the four work weeks just before the holiday and regularly scheduled work days both before the holidays and just after the holiday are eligible to be paid for all provincial statutory holidays. If your schedule has you working on a statutory holiday, you receive payment as per the Employment Standards Act. The maximum number of hours paid for a statutory holiday will be based on your standard hours of work.

There are ten public holidays in Ontario:

- New Year's Day
- Family Day
- Good Friday
- Victoria Day
- Canada Day
- Civic Holiday
- Labour Day
- Thanksgiving Day
- Christmas Day
- Boxing Day

DUTIES & PLACE OF EMPLOYMENT

True North Imaging may require an employee to perform the duties of other positions, or to alter or add to existing duties. Notwithstanding that, an employee who may have been assigned to one particular clinic may be asked to work in a different location on a temporary or permanent basis. True North Imaging will attempt to accommodate the wishes of an employee who makes a written request for transfer.

IMPAIRMENT/MENTAL HEALTH

True North Imaging believes in a safe environment for patients, families, staff, volunteers and members of the public. This duty includes addressing any issue that may impair an employee's ability to perform their work functions responsibly.

All individuals working at True North Imaging (including students, volunteers and service providers) are expected to report fit for duty for scheduled shifts and be able to perform assigned duties safely and acceptably without any limitations due to use or after effect of alcohol, illicit drugs, non-prescription drugs, prescribed medications, or any other substance situation, or issue that may impair judgment or performance.

True North Imaging will not tolerate the presence or use of illicit drugs, recreational drugs and alcohol on the worksite premises. Any individual failing to adhere to this policy will be subject to discipline up to and including termination.

Managers and supervisors will identify and handle all situations promptly where there are concerns about an employee's ability to perform their duties safely.
Employees who are assessed and suspected to be impaired while at work will be sent home immediately. The supervisor is responsible for documenting any incidence of suspected impairment.

Employees are encouraged to inform their supervisor about any situation that may compromise their safety or the safety of others, or impair their performance. Employees shall advise their supervisor whenever they have any concerns about their colleagues' fitness for duties.

True North Imaging honors that disabilities are protected through human rights legislation and will provide support for employees by providing access to confidential assessment and an Employee Assistance Program.

DISCONNECTING FROM WORK POLICY

True North Imaging recognizes that disconnecting from work is important to achieving a healthy work-life balance. We encourage employees to disconnect from work during their personal and private time. This means not engaging in work-related communications, including emails, telephone calls, video calls or the sending or reviewing of other messages, so as to be free from the performance of work.

We also recognize however, that the demands of the job may at times require communications outside of normal working hours. To that end, we have developed this policy to assist employees in developing common expectations relating to work-related communications outside of regular work hours.

GENERAL GUIDELINES

Employees, including managers, should aim to conduct their communications during regular work hours whenever possible. When the need arises to communicate outside of regular work hours, staff should do so with the following considerations in mind:

- Is there an immediate need for a response? If not, avoid calling, texting or sending emails tagged as high priority;
- If the matter does not require immediate attention, recognize that the recipient may not respond until their return to work;
- Communicate in the least disruptive manner relative to the urgency of the matter (for example, an email may be sufficient instead of a phone call);
- Avoid sending emails or texts at inopportune times (weekends, holidays etc.) unless the matter is urgent or requires immediate attention;
- If the person you are contacting is in a different time-zone, be mindful of that difference;
- Use the "delay send" option to schedule emails that do not require an immediate response; and
- Do not contact co-workers using their personal emails or phone numbers, though this may be necessary in certain emergencies.

TIPS TO DISCONNECT

To assist in creating a healthy work-life balance, employees are encouraged to be proactive and:

- Make any scheduling restrictions known to your manager and co-workers;
- Make others aware of approved time off well in advance;
- Use automated email responses to make others aware of your availability and provide contact information for a person who can be contacted to help in the event of an emergency or urgent situation;
- If the matter does not require your immediate attention, do not feel compelled to respond to work-related communications outside of regular work hours; and
- Be mindful of your co-workers regular working hours so as to afford them the same courtesy as they will try to provide you.

APPLICATION OF THE POLICY

This policy applies to all employees. We recognize that work schedules may vary within the Company. This policy should be applied within the context of the individual employee's regular work schedule.

If you have any questions or concerns about this Policy, please speak with your direct supervisor or to a member of the human resources team.

LEAVE POLICY

Vacation

Eligibility for Vacation Time:

This policy applies to all employees unless vacation time is expressly agreed upon in the employee's written contract of employment.

Vacation Time Entitlement:

Vacation time entitlement depends on years of service with True North Imaging:

Fewer than 5 years of continuous service	10 days (4% of earnings)
After 5 years of continuous service	15 days (6% of earnings)
After 10 years of continuous service	20 days (8% of earnings)
After 20 years of continuous service	20 days + 2 additional days
After 25 years of continuous service	20 days + 3 additional days

True North Imaging's vacation year is January 1 to December 31. During the first year of employment or when vacation entitlement increases on the anniversary date of employment in accordance with the above schedule, vacation entitlement is prorated for the relevant portion of the calendar year (e.g., accrue .83 days' vacation time for each completed month of service).

Vacation pay is based on regular wages earned. Regular wages do not include bonuses, overtime pay, public holiday pay, case work, vacation pay or severance pay. In addition, compensation other than for work performed for True North Imaging (short-term disability, long-term disability, supplemental benefits during pregnancy leave, etc.) is not considered earnings for the purposes of calculating vacation pay. Vacation pay is not earned while an employee is on an unpaid leave of absence.

Vacation pay is paid as a percentage of earnings at the following rates:

10 days	4% of earnings
15 days	6% of earnings
20 days	8% of earnings
22 days	8% of earnings + 2 days
25 days	8% of earnings + 3 days

Scheduling of Vacation Time:

The following guidelines apply to scheduling of vacation time:

1. Employees may submit vacation requests (via email) at any time during the year, however for the peak vacation periods of June 15th – September 15th, December 15th – January 31st and March 1-31st, employees must submit their requests as follows:

- June 15th – Sept. 15th requests – submitted by April 1st, response provided by April 15th
- Dec. 15th – January 31st – submitted by October 31st, response provided by November 15th
- March 1st – March 31st – submitted by January 15th, response provided by February 1st

****A maximum of 2 weeks' vacation will be granted during the peak vacation periods to allow all employees to have access to this time period. Vacation requests for non-peak time periods will be approved on a first come, first serve basis.****

2. Vacation requests will be approved based on a variety of factors including operational needs and seniority.
3. Requests for more than 3 consecutive weeks of vacation must be approved by senior management.
4. All employees are expected to take 2 weeks' vacation time each calendar year following the year they commence employment (Employment Standards Act)
5. We strongly recommend that you do not make any bookings for airfare, hotels, etc. (especially non-refundable bookings) until your vacation has been approved by True North Imaging.
6. All vacation scheduling is subject to True North Imaging's operational requirements, including ensuring we have sufficient staff to service our patients safely and efficiently. True North Imaging will attempt to accommodate all scheduling requests, but True North Imaging may deny a particular request if the requested time-off conflicts with the operations demands of the business. In addition, True North Imaging reserves the right to direct employees to use vacation time during particular periods if business demands necessitate such a step (e.g., clinic is closed for holidays or renovation).
7. Vacation time-off may be scheduled in segments of as little as one day at a time.
8. If an employee's plans change, please inform your immediate supervisor as soon as possible.

Vacation Absence Notices:
Employees with a True North Imaging email account are reminded to set-up appropriate out-of-office email and voicemail alerts prior to their vacation.

Unused Vacation Time:
Employees are strongly encouraged to use all vacation time in the year in which it is earned. Employees can "bank" or carry-over up to a maximum of 10 days vacation time above their annual vacation entitlement from one year to the next. Any unused vacation days that are carried over to the following year in excess of that maximum threshold are canceled without pay (subject to every employee's minimum entitlement of 2 weeks of vacation time or 4% of wages earned for vacation pay under the Ontario *Employment Standards Act, 2000*).

Example #1: An employee is entitled to 20 days of vacation time in 2012 but has only used 10 days by December 31, 2012. The employee therefore has up to 30 vacation days that could be used in 2013 (i.e., 10 carried over plus 20 for 2013 that accrue during 2013). If the employee takes 15 vacation days during 2013, the employee will have 15 days of "banked" or carry-over vacation as of December 31, 2013. This exceeds the applicable maximum threshold. As a result, the employee automatically carries over 10 unused vacation days to 2014 and 5 unused vacation days (e.g., days 11-15) are automatically canceled without pay on January 1, 2014.

Example #2: Another employee is entitled to 15 days of vacation time in 2012 but has only used 10 vacation days by December 31, 2012. The employee therefore has up to 20 vacation days that could be used in 2013 (i.e., 5 carried over plus 15 for 2013 that accrue during 2013). If the employee only takes 10 vacation days during 2013, the employee will have 10 days of "banked" or carry-over vacation as of December 31, 2013 (e.g., 5 from 2012 and 5 from 2013). Since the maximum threshold of carrying over no more than 10 days vacation time has not been exceeded, no vacation days are canceled.

Payment in Lieu of Vacation:

Cash compensation cannot be taken in lieu of vacation entitlement except upon termination. To the extent that an employee has taken more vacation than accrued to the date of termination, such vacation overpayment will be deducted from their final earnings settlement.

Bereavement Time Paid:

a. Five working days in the event of death of an employee's spouse, same-sex partner or child.
b. Two working days in the event of the death of an employee's parent, sibling, or parent-in-law.
c. One working day in event of death of brother/sister-in-law, daughter/son-in-law, grandparent.
d. Employees will advise their immediate supervisor of their request for bereavement leave.
e. Bereavement time paid to full-time staff only.

For the purpose of this Paragraph 13, “spouse” means a husband or wife or same-sex partner.

Maternity Leave:

True North Imaging will grant unpaid maternity leave to eligible employees as defined in the relevant government legislation.

Personal/Sick Days:

a. Full-time employees, with standard work hours of 35 hours per week or more, are entitled to six paid personal days, which will be accumulated at ½ day per month based on the employee’s standard hours of work, each year. Personal days must be taken within the calendar year and cannot be accumulated beyond the calendar year.
    - Employees with standard work hours of 28 – 34 hours per week are entitled to four paid personal days, which will be accumulated at 1 day every 3 months.
    - Employees who work 27 hours or less per week are not entitled to paid personal days.
b. Employees must contact their supervisor directly about their inability to work at the very earliest opportunity.
c. In order to schedule a personal day in advance, employees must consult with their supervisor to see if the schedule can accommodate their request. Personal days are to be scheduled at a time that is convenient to both the employee and True North Imaging
d. Absence from work, due to illness, that is greater than 2 consecutive working shifts requires a medical certificate. True North Imaging will reimburse employees, upon presentation of a receipt, for any charges incurred obtaining a medical certificate.

e. Any accident or injury on the job, or work related, must be reported. Incident Report – Staff must be sent immediately to the immediate supervisor.

Leave of Absence:

a. If an employee requests leave of absence, the employer shall determine eligibility; no salary will be earned during this period.
b. Any requests for a leave of absence shall be in writing and may be granted at the sole discretion of the employer. If a leave is granted it shall be without pay, however, benefits shall be continued for a period not to exceed 30 days. If the leave is longer than 30 days the employee may, at his/her option, continue the benefit package at his/her sole expense.

Emergency Leave:

Employees have the right to take up to 10 unpaid job-protected leave each calendar year due to illness, injury, death and certain emergencies and urgent matters.

Personal emergency leaves may be taken for:

1. Personal illness, injury or medical emergency

OR

2. Death, illness, injury, medical emergency or urgent matter relating to the following family members:
   - Spouse (includes both married and unmarried couples, of the same or opposite genders)
   - Parent, step-parent, foster parent, child, step-child, foster child, grandparent, step-grandparent, grandchild or step-grandchild of the employee or the employee's spouse
   - Spouse of the employee's child
   - Brother or sister of the employee
   - Relative of the employee who is dependent on the employee for care or assistance

NOTE: An urgent matter must be unplanned, or out of the employee's control, **and** involve the possibility of serious negative consequences if not responded to.

PREGNANT PERSONNEL

All employees must notify their supervisor that they are pregnant. MRT's must notify their supervisor as soon as possible. Although there is no limitation to the performance of diagnostic x-ray procedures, MRTs must take steps to minimize their exposure to radiation. MRTs should also be familiar with the regulations that apply to their jurisdiction. Government of Ontario, Occupational Health and Safety Act (R.R.O. 1990, Regulations 861: X-Ray Safety) available at: https//www.e-laws.gov.on.ca/thtml/english/elaws_regs_900861_e.htm [Accessed 30Apr2018]

MEDICAL BENEFITS

After three months, full-time employees are eligible to participate in the employee benefit program. All employees are covered under the Workplace Safety and Insurance Board (WSIB).

DENTAL BENEFITS

After six-months, full-time employees are eligible for the benefit package which is then in effect.

PAY PERIOD & TIME CLOCKS

All employees are paid bi-weekly, by direct bank deposit. All employees are to punch in upon arrival to work and punch out at shift end using their ID number and finger pressure on the time clock situated in each clinic. All pre-approved overtime is paid at time worked as no banked time is allowed**.**

PERFORMANCE APPRAISALS

Performance appraisals are completed annually for each employee by their direct supervisor. The staff member will self evaluate and make comments or respond to the comments made by their supervisor.

HOURS OF WORK

a. The normal work period varies depending on the operational needs of a clinic or workplace however typically ranges between a seven-to-eight-hour day (30-60 minutes unpaid lunch), thirty-five-to-forty-hour week, five days a week; this may vary and hours will be determined by clinic location and shift. Employees are expected to be ready to receive their patients at the beginning of their shift. Arrangements are to be made among staff to stagger the lunch period, where applicable.
b. There may be occasions when a patient must be examined on an emergency basis. In these circumstances top priority is to be given to accommodating the referring physician, and staff are expected to remain on the premises until the examinations and all formalities are completed. The welfare of the patient is always paramount.
c. Overtime is defined as any extra shifts worked or those hours worked in excess of forty four hours per week. Overtime is paid at the overtime rate of time and a half. Any time worked at the end of the shift up to a total of forty-four hours per week, will be paid at regular rate.
d. Any and all overtime must be authorized by a supervisor or the head office supervisor. It is paid at the rate of one and a half normal base pay.
e. Schedules, shifts, and hours of work may be changed by True North Imaging, as required.

Management and salaried employees are expected to perform their duties as required and are not entitled to overtime pay.

OCCUPATIONAL HEALTH AND SAFETY

The Occupational Health and Safety Act ensures a healthy and safe workplace. It is mandatory that all employees read the Emergency Response and Risk Management Policies Manual. This must be read every year and signed when completed. A copy of the Occupational Health and Safety Act is available at every clinic.

UNAUTHORIZED STUDIES

Examinations may only be performed on bona fide patients. A technologist may only scan herself/himself or allow himself/herself to be scanned in the context of ultrasound training. No

examinations may be performed on any individual, other than for training purposes, unless all proper documentation has been completed, including a **proper requisition, technologist report, and OHIP billing.**

TERMINATION POLICY

Following the conclusion of the probationary period, True North Imaging may terminate employment pursuant to the agreement at any time without just cause upon giving the greater of (a) four (4) weeks' written notice of termination or payment of wages in lieu of notice of termination (or a combination of notice and payment of wages in lieu of notice at the discretion of True North Imaging) and (b) the minimum amount of notice of termination or payment of wages in lieu of notice of termination (or a combination of notice and payment of wages in lieu of notice at the discretion of True North Imaging), prescribed by the *Employment Standards Act, 2000* (the "Act"), plus severance pay, if any, prescribed by the Act (either (a) or (b) being the "Notice Period"). The applicable Notice Period is inclusive of any statutory termination pay and statutory severance pay to which may be entitled under the Act. In addition, True North Imaging shall pay any earned and unpaid wages and all vacation pay accrued and owing. True North Imaging shall also make the benefit plan contributions necessary to maintain participation for the minimum period prescribed under the Act in all benefit plans provided to you by True North Imaging, if any, immediately prior to the termination of employment. Employee agrees that True North Imaging may deduct from any payments hereunder of contributions to the benefit plans in accordance with the terms of such plans. No further payments, compensation or entitlements in lieu of notice of termination, including any payment in lieu of bonus **[and/or continuing medical education allowance]** during the notice period, will be paid unless required by the Act. Notwithstanding the foregoing, employees will not receive less than your minimum entitlements under the Act.

JOB DESCRIPTIONS

Job descriptions outlining duties will be provided to each employee. Job descriptions are reviewed annually during the policy and procedure review.

STUDENTS

All students must be from a "registered" program which provides adequate WSIB and other required insurances.

Student orientation will be conducted as it is with all other employees. Each student will be provided with an in depth review of department functions and activities. This will include all safety training and tests (WHMIS, OADA, Health & Safety in the Workplace, IPAC Core & Reprocessing, etc).

All students must wear a name badge and identify as a student. Students must be monitored and supported by their appointed "trainer" at all times.

REQUIRED TESTING & TRAINING

Upon hire, all new staff are required to complete the following testing as part of the hiring process.

- WHMIS
- AODA
- Health and Safety at Work
- Workplace Anti-violence, Harassment Policy

- IPAC testing (Centralized Reprocessing Training)

All testing must be completed within 2 weeks of hire. One copy must be kept by the employee, another to be kept at the clinic and one copy to be sent to the immediate supervisor to be placed in the personnel file.

Once all training and testing has been completed, both supervisor and new employee will sign off indicating the adequate training has been achieved. (see attached training form)

On Going Testing

TEST/TRAINING:	FREQUENCY:	MONITORED BY:
WHMIS	Annually	Immediate supervisor
AODA	Annually	Immediate supervisor
Health and Safety	Upon hire	Immediate supervisor
Workplace anti-violence, Harassment policy	Annually	Immediate supervisor
IPAC testing (Centralized Reprocessing Training)	Annually	Immediate supervisor

Training Checklists

- Receptionist
- Ultrasound Techs
- MRT (X-Ray, BMD and Mammography)
- COVID-19 Screener
- PACS Administrator

Appendix E

New Employee Check-list:

Employee Name: _____

Upon hire you will need to complete the following forms, tests and read and sign the Policy & Procedures Manual:

Given:		**Returned:**
☐	Contract	☐
☐	CMRITO Registration # _____ (DMS/MRT ONLY)	☐
☐	Address/clinic location form	☐
☐	In case of emergency form	☐
☐	Banking information form / void cheque	☐
☐	Application for group coverage – I.A. Financial	☐
☐	Personal Tax Credits Return (TD1ON)	☐
☐	Personal Tax Credits Return (TD1)	☐
☐	Hire Performance Criminal consent form	☐
☐	Social Media Policy consent form	☐
☐	Employee Confidentiality Agreement	☐
☐	e-Workplace Training (WHMIS, Workplace Violence/Harassment & AODA)	☐
☐	Health and Safety at work test – online (see link)	☐
☐	Centralized Reprocessing Training – see link	☐
☐	Workplace Anti-violence, Harassment Policy/Acknowledgment	☐
☐	Group RRSP/Deferred Profit-sharing Program Information form (This is for your information only – not to be returned) one of the reps from Investors Group will contact you once you have completed your 3-month probation period.	
☐	Employment Standards Act (ESA) information sheet	
☐	Employee Assistance Program (EAP) LifeWorks information sheet	
☐	Orientation of facility i.e.: floor plan, PPE, first aid kit, fire extinguishers, emergency phone numbers, health & safety board etc.…	

I _____ have completed all necessary testing and read and understand the Policy and Procedures manual.

_____ _____

Employee Signature: Date:

Please return this checklist along with the above-mentioned forms, once completed. This will need to be returned as soon as possible to avoid any delay in payroll.

FOR OFFICE USE

Training completed by: _____ Date: _____

Supervisor's signature: _____ Date: _____

QUALITY ASSURANCE ADVISOR JOB DESCRIPTION

As an integral member of our health care team, the QA advisors role involves a wide range of activities and responsibilities, all aimed at maintaining a high standard of quality and patient care.
The advisor's role is to identify and mitigate risks, lead initiatives to enhance patient safety, and ensure that care delivery processes are free from errors and aligned with patient safety requirements. The advisor will lead in resolving care-related disputes and monitor service results, ensuring the clinic's operations align with patient care excellence.

Through regular visits to the clinics, assessment and policy updates, the advisor will ensure that the clinics operate smoothly, meet all regulatory compliance requirements and address any gaps in service quality promptly. The advisor will be responsible for fostering a culture of continual improvement, helping to build values of excellence, accountability and teamwork among all staff members. The advisor will provide guidance on staff hiring and training, continuing education, performance appraisals and peer review programs. They will also offer recommendations on acquiring and maintaining equipment, updating policies and procedures, reviewing all assessment and inspection reports and signing the corrective action plan.

Responsibilities:

- must meet qualifications as described in Ontario Regulations 215/23 and any conditions defined by the Ontario Ministry of Health at time of license application.
- must submit a “Notice of Appointment of Quality Assurance Advisor” and “Quality Assurance Acknowledgement” forms to the MOH Director, ICHSC programs
- advise licensee with respect to staffing including:
    - -advising on professional staff hiring processes
    - -advising on continuing education of staffing
    - -performance appraisals of staff (cross reference to criteria)
    - -implementing peer review programs
    - -responding to staff concerns
- advising licensee on equipment and technology acquisitions and maintenance
- establishment and updating of Policies, Procedures and standardize reports
- foster a culture of continual improvement within the operation with relationships with staff and patients and with patient care policies and procedures
- review all assessment and inspection reports and sign corrective action plans
- provide leadership to address and resolve care related disputes between patients and staff
- monitor the results of service provided, including incident reports
- annually complete checklist for IPAC Core Elements and Reprocessing of Medical Equipment Devices
- visit the clinics at least four times a year and keep record of each visit
- be available, or ensure availability of a member of the Quality Assurance Committee for consultation and or immediate decisions during working hours
- chair the Quality Assurance Committee meetings

RECEPTIONIST JOB DESCRIPTION

As integral members of our health care team, all receptionists are expected to perform their duties in a courteous, professional manner. At all times, our staff is to employ professional judgment, discretion and adhere to the True North Imaging Code of Conduct in order to protect the rights and privacy of each patient.

Daily Responsibilities:

- greet patient – promptly and in a professional manner
- obtain the physician requisition and confirm its complete
- obtain necessary patient information, ensuring patient confidentiality
- prepare documentation
- enter patient registration
- pull/print any previous reports for technologist
- if required, show patient to change area, provide gown with changing instructions
- inform technologist when patient is ready
- answer telephone in a courteous and timely manner
- book appointments, providing appropriate time and preparation for exam scheduled
- provide patient with necessary instructions required for procedure when booking appointment
- walk-in and emergency patients will be accommodated, inform them of waiting time
- scan tech sheets into PACS system, complete cases to reporting Radiologist
- distribute (where able) and/or mail reports to referring physicians
- ensure fax machine has ample paper supply and spare cartridges
- keep waiting room and office area neat and clean at all times
- make sure bathroom is tidy and properly stocked
- understand and utilize all office systems and procedures
- must read protocol manual at least once a year and use as reference source
- must read WHMIS training manual package annually and take online test annually

Related Duties:

- responsible for petty cash
- prepare monthly office supply order form (i.e. Frid & Russell)
- distribute patient and physician survey forms as per protocol
- inform immediate supervisor of any untoward incidents that require a report to head office
- be aware of any changes in True North Imaging protocol manual
- distribute and/or post any information memos
- be of assistance to co-workers whenever possible

Appendix F

RECEPTIONIST TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
FAMILIARITY WITH THE CLINIC:	***Staff Initials***	***Trainer Initials***
Tour of facility given/locate all exits and emergency exits in facility		
Read P&P manual and where to find in the portal		
Read the fire procedure policy/ review the fire escape route plan		
Instruct where to find emergency numbers, supervisors number		
Instruct where to locate supplies and what supplies are needed for your job		
Instruct how to safely remove dirty launder and where to place it		
ADMINISTRATIVE SKILLS: Trainers must ensure that the new employee understands and implements systems and protocols related to the job requirements. They must also ensure that new employees are aware of safety measures and how to reach appropriate persons related to the emergencies.		
OFFICE DUTIES:	*YES*	*NO*
Able to book in RIS, what needs to be printed		
Able to find reports ie: failed fax report, tech approval list etc….		
Able to use fax, scanner and phone systems		
Understand the daily cleaning duties and able to complete the form		
Able to answer and transfer calls, able to find ext numbers for staff		
Able to retrieve staff schedules		
Able to view and respond to emails from patients, supervisors, colleagues		
PATIENT PROTOCOLS:		
Able to greet patient in a friendly timely manner		
Ensure that the patient's name, DOB, referring doctor is correct on requisition		
Ensure patient has prepared for examination		
Have pt complete any questionnaires related to their exam ie: mammo, BMD		
inform patient if there is going to be a delay in their appointment time		
Instruct patient to sit and the tech will call them in for their exam		
Answer any question the patient may have		
PACS/RIS:		
Scan all necessary paperwork into PACS, ensure they are visible		
Complete study in RIS, assign RAD and tech to the study		
know how to login to RIS and PACS		
FORMS/COMPUTER:		
Ensure you use correct worksheet for study/shown where to find worksheets		
Able to find and view previous reports		
Able to add/remove procedures in RIS		
OCCUPATIONAL HEALTH & SAFETY:		
Know where the Health & Safety board, WHMIS, SDS, AODA manuals etc…		
know your Health & Safety rep.		
Know where to find PPE		
IPAC courses done annually - instruction given for probe reprocessing		

DIAGNOSTIC MEDICAL SONOGRAPHER JOB DESCRIPTION

As integral members of our health care team, all technologists are expected to produce, in accordance with True North Imaging protocols, the highest quality diagnostic ultrasound in combination with optimal patient care. At all times, our staff is to employ professional judgment, discretion and adhere to the professional code of conduct in order to protect the rights and privacy of the patient.

Daily Responsibilities:

- obtain signed ultrasound requisition and confirm its complete
- confirm patient followed proper preparation for examination to be performed
- obtain a complete and relevant history from the patient
- explain clearly to patient the nature of examination to be performed in accordance with True North Imaging protocol
- anticipate and respond to the needs of the patient
- answer patient questions to the best of your ability without rendering a medical opinion
- assure patient that the study will be reported promptly and sent to referring physician
- minimize patient exposure to acoustic energy
- ensure that the images are stored to PACS
- perform physician requested examination according to True North Imaging protocol
- extend standard imaging protocol as required by patient history or initial sonographic findings
- produce the best diagnostic information possible with the available resources while exercising discretion and judgment in performance of examination
- review and bring together pertinent patient history, physical examination and supporting clinical data to prepare a technologist's observation worksheet in accordance with True North Imaging protocol and provide the Radiologist with a written summary of findings to facilitate a diagnostic result
- It is mandatory that as a technologist, you must record your name on your observation worksheet
- recognize examination findings that require immediate clinical response and notify the radiologist in accordance to company protocols
- comprehend and employ appropriate medical terminology, terms, and phrases
- interact with the Radiologist or other appropriate physician as permitted by policy with oral and/or written data
- maintain infection control by using PIDAC guidelines. E.g.: hand washing, changing table paper, cleaning/disinfecting, as appropriate, probes and cables between examinations; use gloves and other barrier policies as required etc.…
- be able to employ emergency procedures as necessary
- utilize equipment to its fullest capacity in obtaining every examination
- maintain properly stocked, clean ultrasound rooms
- ensure that clinic is always neat and clean
- all sonographers holding current CMRITO registration and who have the knowledge, skill and ability to perform MRT related examinations are expected to assist radiography department as necessary
- understand and be able to utilize all office systems and procedures
- must read WHMIS training manual package annually and take online test annually

Related Responsibilities:

- maintain all records (i.e. repair, patient, incident) are to be prepared and documented in accordance with True North Imaging protocol
- be aware of any changes in protocol by reading and initialing memo binder
- must read protocol manual at least once a year and use as reference source
- be informed and inform supervisor of any schedule changes
- completed patient surveys are to be sent to head office supervisor on a monthly basis
- perform and document designated quality assurance tests and procedures
- maintain competence through continuing education
- be of assistance to co-workers
- ensure copy of current license and education log are present in each facility worked and copy sent to head office supervisor
- keep in good standing with CMRITO
- keep CME's up to date
- perform quarterly technologist peer review

Charge Technologists:

- in addition to above duties charge technologists are responsible for:
- the overall running of their clinic
- training for quality controls, IPAC
- ensure all documents used are current and implemented
- equipment records
- ensuring infection controls
- patient reports
- ensure that scheduled preventative maintenance is performed on all equipment
- prepare a monthly medical supply order for all required supplies
- reporting to/advising direct supervisors, QA advisor, radiologists

Supervisor:

- in addition to the above duties, supervisors are responsible for smooth functioning of clinics under their direction
- prepare written report as required to head office supervisor
- attend all required meetings
- maintain open communication and co-operation with other supervisors and staff members
- ensure that staff performs duties in accordance with True North Imaging protocols and policies

Appendix G

ULTRASOUND TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
ORIENTATION:	**Staff Initials**	**Trainer Initials**
Tour of facility - locate reception/waiting area/scan rooms/reprocessing/fire exits/fire extinguishers		
Locate supplies (procedure supplies, linens, gel, cleaning supplies)		
PACS/RIS (logins, navigation, procedures)		
Familiarize with requisitions/clinical forms		
Scanning and reporting protocols		
Know your H&S representative		
Locate H&S board, department manuals (WHMIS, SDS, OADA, Infection Control, etc)		
Complete required tests (WHMIS, OADA, H&S, IPAC, Workplace Violence, etc) - ensure these are completed annually		
Site Policies and Procedures		
Locate Radiologist/PACS Admin/Supervisors contact information		
CORE SKILLS:		
You were taught to use the ultrasound unit to perform your job		
Workflow, what supplies are needed, daily worksheets and expectations		
Read P&P manual; ie-ultrasound protocols		
Sign delegated acts form for any specific ultrasounds you perform		
Locate service numbers and system ID numbers for equipment		
Instruction given for HLD - Reprocessing protocols		
Greet patient and correlate Patient Identification		
Interpret requisition accurately and obtain accurate history/assessment		
Show patient to change room, instruct patient to change into exam gown		
Instruct patients properly (breathing, explanation of procedure, etc.		
Position patient correctly (supine, LLD, RLD, upright, etc)		
Let patient know that their doctor will receive a report in 24-48 hours		
Utilize the ALARA principle		
Utilize appropriate labeling of images		

Select appropriate procedure/transducer		
Select suitable imaging parameters (Gain/Depth/Focus)		
Learn the process on how to deal with STAT cases. ie-ectopic-which radiologist to call		
Clean room and equipment after each patient		
Ensure all images have been sent to PACS and completed to correct radiologist		
Ensure related previous reports/images are available and viewed		
Able to add/remove procedures in RIS		

SONOGRAPHIC SKILLS: Trainers must ensure that the new employee can demonstrate and identify both normal and abnormal findings for each modality and are performing and following protocols as outlined in the TNI Ultrasound Protocols. They must also ensure that new employees properly utilize colour, power, and/or pulsed doppler and are demonstrating, identifying and measuring appropriately in longitudinal and transverse prior to scanning on their own.

	YES	NO	Abnormal findings documented	Abnormal findings missed
ABDOMINAL ULTRASOUND:				
Demonstrates and identifies abdominal vasculature (aorta, IVC, iliac arteries, Celiac trunk, SMA)				
Demonstrates and identifies liver (Rt and Lt) in Sag and Transverse (liver, hepatic veins, hepatic arteries, portal veins)				
Demonstrates and identifies gall bladder in Sag and transverse and measures CBD with proper caliper placements				
Demonstrates and identifies Pancreas (pancreatic head, body, tail and pancreatic duct) in Sag and transverse				
Demonstrates and identifies spleen in Sag and transverse				
Demonstrates and identifies bilateral kidneys in Sag and Transverse				
Appropriate measurements (RMCL, Kidneys, Spleen, Aorta, CBD)				
Identifies retroperitoneal spaces in Sag and Transverse				
Properly utilizes colour, power, and/or pulsed doppler				
Identifies pathologies and measures them in Sag and Transverse planes, with and without colour/power, and/or pulsed doppler when needed				
FEMALE PELVIC, TV AND GU TRACT ULTRASOUND:				
Demonstrates and identifies bilateral kidneys (Sag, Transverse, upper pole, mid pole, hilum and lower pole).				
Measures bilateral kidneys (Sag)				

Identifies and measures pre-void bladder volume				
Identifies and interrogates bilateral uretero-vesical jets				
Identifies and measures post-void bladder volume				
Demonstrates and identifies the uterus in longitudinal and transverse (fundal/body/lower uterine segment)				
Demonstrates and identifies the cervix in longitudinal and transverse				
Demonstrates and identifies the vagina in longitudinal and transverse				
Demonstrates and identifies the right ovary in longitudinal and transverse, documenting ovarian volume				
Demonstrates and identifies the left ovary in longitudinal and transverse, documenting ovarian volume				
Demonstrates and identifies the adnexa (fallopian tubes, cul-de-sac, vasculature, muscle and pelvic ligaments)				
Measurements appropriately in longitudinal and transverse planes				
Identifies and measures any pathologies in Sag and Transverse applying doppler when necessary				
SONOHYSTEROGRAMS:				
Demonstrates and identifies uterine cavity in Sag and Transverse				
Measures anterior and posterior endometrial walls				
Constructs and configures 3D images of the uterine cavity				
Identifies and measures any abnormal findings applying doppler when necessary				
Identifies and assesses fallopian tubes patency				
Identifies and interrogates ovaries and adnexal structures				
TRANSLABIAL PROTOCOL:				
Demonstrates and identifies anterior and posterior cervical walls				
Identifies and locates cervical midline from internal os to external os				
Assess width of external os if open				
Identifies any abnormal masses and identifies area of concern				
Images Sag and Axially through any mass, applying colour/doppler interrogation				
MALE PELVIC/PROSTATE/GU TRACT:				
Demonstrates and identifies bilateral kidneys (Sag and Transverse upper pole, mid pole, hilum and lower pole)				
Measure bilateral kidneys (Sag)				

Identifies and measures pre-void bladder volume				
Identifies and interrogates bilateral uretero-vesical jets				
Demonstrates and identifies prostate in Sag and Transverse measures				
Measures and documents prostate volume				
Demonstrates and identifies seminal vesicles in Sag and Transverse				
Demonstrates and identifies post-void bladder volume				
Obtain and document proper measurements (Sag and Transverse bilateral kidneys and prostate)				
Properly utilizes colour, doppler and/or pulsed doppler				
Identifies and measures any abnormal findings (with proper caliper placement) applying doppler when necessary				
TRANSRECTAL PROSTATE PROTOCOL:				
Identify and measure urinary bladder and calculate the pre-void volume, ureterovesical jets				
Identify and measure post-void bladder volume				
Scan bilateral kidneys in Sag and Transverse, documenting the longitudinal length of each kidney				
Identify and scan the seminal vesicles, vas deferens in transverse plane				
Identify and scan the prostate gland in Sag and Transverse documenting base, mid-gland and apex				
Measure the gland in Transverse and Sag planes calculating prostate volume				
Identify and scan the right and left seminal vesicles measuring the diameter at the probe insertion site				
Apply doppler (colour, power, spectral) as needed				
OBSTETRICAL 1ST TRIMESTER:				
Demonstrates and identifies the number and location of gestational sac				
Demonstrates and identifies the size and shape of yolk sac				
Demonstrates and identifies the presence or absence of cardiac activity				
Demonstrates and identifies the fetal pole				
Demonstrates and identifies the amnion				
Measures all appropriate parameters related to 1st trimester (gestational sac, fetal pole, nuchal thickness)				
Demonstrates and identifies the stomach				
Demonstrates and identifies the urinary bladder				

Demonstrates and identifies the umbilical cord insertion				
Demonstrates and identifies four limbs				
Able to identify and assess location placenta				
Able to identify and assess cervix (including cervical length and state of cervix)				
Able to identify and assess amniotic fluid level				
Surveys other pelvis structures (ovaries, adnexa, etc)				
Properly utilizes M-mode, colour, power and/or pulsed doppler				
Demonstrates ability to incorporate the instruments obstetrical reporting package to analyze measurements				
Correlates measurement data to determine whether discrepancies exist				
NUCHAL TRANSLUCENCY:				
In addition to 1st trimester protocol, demonstrates and identifies maternal cervical length in Sag, Ovaries (Sag and Transverse)				
Obtains three NT measurements with proper image adjustments				
Identifies and demonstrates fetal nasal bone				
OBSTETRICAL 2ND TRIMESTER:				
Able to identify and assess fetal lie				
Able to identify and assess location of placenta				
Able to identify and assess lower edge of placenta in relation to internal os				
Able to identify and assess cervix (including cervical length and state of cervix)				
Able to identify and assess maternal ovaries/adnexa				
Able to identify and assess amniotic fluid level				
Able to identify and assess fetal heart rate (including M-mode measurement)				
Able to identify and assess biparietal diameter				
Able to identify and assess head circumference				
Able to identify and assess abdominal circumference				
Able to identify and assess femur length				
Able to identify and assess cerebellum				
Able to identify and assess cisterna magnum				
Able to identify and assess cavum septum pellucidum				
Able to identify and assess lateral ventricles (with PH measurements)				

Able to identify and assess thalamus				
Able to identify and assess choroid plexus				
Able to identify and assess nuchal fold (with measurement)				
Able to identify and assess orbits				
Able to identify and assess facial profile				
Able to identify and assess nose/lips				
Able to identify and assess cardiac four chamber				
Able to identify and assess LVOT				
Able to identify and assess RVOT				
Able to identify and assess 3 VV				
Able to identify and assess diaphragm				
Able to identify and assess stomach				
Able to identify and assess kidneys				
Able to identify and assess urinary bladder				
Able to identify and assess fetal gender				
Able to identify and assess the upper extremities (humerus, radius, ulna, hand)				
Able to identify and assess lower extremities (femur, tibia, fibula, foot)				
Able to identify and assess umbilical cord (insertion and # of vessels)				
Demonstrates ability to incorporate the instruments obstetrical reporting package to analyze measurements				
Correlates measurement data to determine whether discrepancies exist				
Properly utilizes M-mode, colour, power and/or pulsed doppler				
OBSTETRICAL 3RD TRIMESTER:				
Able to identify and assess fetal lie				
Able to identify and assess location of placenta				
Able to identify and assess lower edge of placenta in relation to internal os				
Able to identify and assess cervix (including cervical length and state of cervix)				
Able to identify and assess maternal ovaries/adnexa				
Able to identify and assess amniotic fluid level				
Able to identify and assess fetal heart rate (including M-mode measurement)				
Able to identify and assess biparietal diameter				

Able to identify and assess head circumference				
Able to identify and assess abdominal circumference				
Able to identify and assess femur length				
Able to identify and assess cerebellum				
Able to identify and assess cisterna magnum				
Able to identify and assess cavum septum pellucidum				
Able to identify and assess lateral ventricles (with PH measurements)				
Able to identify and assess thalamus				
Able to identify and assess choroid plexus				
Able to identify and assess diaphragm				
Able to identify and assess stomach				
Able to identify and assess kidneys				
Able to identify and assess urinary bladder				
Able to identify and assess fetal gender				
Able to identify and assess the upper extremities (humerus, radius, ulna, hand)				
Able to identify and assess lower extremities (femur, tibia, fibula, foot)				
Able to identify and assess umbilical cord (insertion and # of vessels)				
Able to perform biophysical profile (cord doppler, amniotic fluid index, breathing, fetal movement, fetal tone)				
Demonstrates ability to incorporate the instruments obstetrical reporting package to analyze measurements				
Correlates measurement data to determine whether discrepancies exist				
Properly utilizes M-mode, colour, power and/or pulsed doppler				
TWINS:				
In addition to 1st, 2nd and 3rd trimester protocols, documents number of yolk sacs, placentas, absence or presence of membrane and membrane thickness				
Calculates and compares amniotic fluid sizes and bladder volume of each twin				
Designates and labels fetuses A, B consistently throughout the scan, with respect to the membrane				
Documents fetal presentation and each fetal lie				
THYROID/NECK ULTRASOUND:				
Demonstrates and identifies the left lobe in longitudinal				

Demonstrates and identifies the right lobe in longitudinal				
Demonstrates and identifies the left lobe in transverse				
Demonstrates and identifies the right lobe in transverse				
Demonstrates and identifies the isthmus in transverse and longitudinal				
Demonstrates and identifies vascular landmarks (carotid/jugular veins)				
Appropriate caliper placement for thyroid measurements				
Demonstrates and identifies other neck structures in longitudinal and transverse				
Properly utilizes colour, power and/or pulsed doppler				
Identifies and measures (with proper caliper placements) any abnormal finding applying doppler when needed				
TESTICULAR ULTRASOUND:				
Demonstrates and identifies the right testis in longitudinal and transverse				
Demonstrates and identifies the right epididymis in longitudinal and transverse (head/body and tail)				
Demonstrates and identifies the left testis in longitudinal and transverse				
Demonstrates and identifies the left epididymis (head/body and tail) in longitudinal and transverse				
Demonstrates and identifies the scrotal sac and skin				
Demonstrates and identifies pampiniform plexus of veins with and without doppler				
Measures and documents pampiniform plexus of veins with and without valsalva				
Appropriate caliper placement for testes/pampiniform plexus of veins measurement				
Identifies and measures any abnormal findings applying doppler when necessary				
LOWER EXTREMITY VENOUS ULTRASOUND:				
Demonstrates and identifies the iliac vein in longitudinal				
Demonstrates and identifies the common femoral vein in longitudinal				
Demonstrates and identifies the saphenous-femoral vein junction				
Demonstrates and identifies the superficial femoral vein in longitudinal				
Demonstrates and identifies the sapheno-popliteal junction				
Demonstrates and identifies the popliteal vein				
Perform colour and spectral doppler assessment on leg veins				
Perform intermittent compression on leg veins				
Perform augmentation on leg veins				

Recognizes compressibility, appearance of thrombus, location and extent				
Identifies and demonstrates abnormal sonographic findings if present				
Properly utilizes colour, power, and/or pulsed doppler				
CAROTID ULTRASOUND:				
Demonstrates and identifies longitudinal scan of CCA (origin up to/past bifurcation)				
Interrogates and obtains velocities of the CCA at least two levels				
Demonstrates and identifies ECA from bifurcation to beyond angle of jaw, obtaining at least one velocity				
Demonstrates and identifies ICA from bifurcation to beyond angle of jaw, obtaining at least one velocity				
Scans and documents transverse CCA				
Scans and documents bifurcation, bulb, both ICA and ECA as far as possible distally				
Obtains longitudinal scans of the vertebral arteries with velocities obtained at least one level				
Demonstrates any abnormal findings with proper sample size, doppler flow angle, stenosis measurements				
BAKERS CYST ULTRASOUND:				
Places the patient in prone position with proper support under the ankle of the leg being examined.				
Demonstrates and identifies femoral condyles to mid portion of calf or full extension of fluid collection in Sag and transverse				
Demonstrates and identifies popliteal artery and vein with proper pulsation and augmentation following compression				
Demonstrates and identifies Baker’s cyst if found with demon staring the neck extending into the knee joint				
BREAST ULTRASOUND:				
Demonstrate and identify left axilla				
Scan and identify left upper outer quadrant in Sag and Transverse				
Scan and identify left lower outer quadrant in Sag and Transverse				
Scan and identify left upper inner quadrant in Sag and Transverse				
Scan and identify left lower inner quadrant in Sag and Transverse				
Scan and identify left nipple in Sag and Transverse				
Demonstrate and identify right axilla				
Scan and identify right upper outer quadrant in Sag and Transverse				

Scan and identify right lower outer quadrant in Sag and Transverse				
Scan and identify right upper inner quadrant in Sag and Transverse				
Scan and identify right lower inner quadrant in Sag and Transverse				
Scan and identify right nipple in Sag and Transverse				
Identify, doppler and measure (AP) any ductal dilation				
Identify, doppler and measure any abnormal findings in Sag and Transverse				

MRT - RADIOGRAPHER JOB DESCRIPTION

As integral members of our health care team, all radiographers are expected to produce, in accordance with TNI protocols, the **highest quality** of diagnostic images in combination with **optimal** patient care. At all times, our staff is to employ professional judgment, discretion and adhere to the professional code of conduct in order to protect the rights and privacy of the patient.

Daily Responsibilities:

- obtain imaging requisition and confirm its complete
- ensure females are not pregnant and document on bag label
- obtain necessary clinical history and document on bag label
- locate any previous images related to the current study
- perform physician requested exam in accordance to company protocol
- anticipate and respond to needs of patient
- explain the x-ray procedure clearly to each patient and explain to them that you will be touching their body throughout the exam, to locate x-ray landmarks
- must obtain verbal consent
- answer patient questions to the best of your ability without rendering a medical diagnosis
- assure patient that study will be reported promptly and sent to referring physician
- adequately protect patient and minimize exposure to ionizing radiation using the ALARA principle
- ensure door is properly closed
- determine exposure factors
- ensure that all structures are well demonstrated and critique for image quality and accuracy
- clean and maintain equipment in accordance with TNI protocols; maintain infection control as per company policy
- follow quality assurance procedures as set out by TNI guidelines
- ensure clinic is neat and clean at all times
- be of assistance to co-workers
- be able to employ emergency procedures as necessary
- be able to utilize all office systems and procedures
- must read WHMIS training manual package annually and take online test annually

Related Responsibilities:

- maintain all records and reports (e.g. repair, patient incident) in accordance with TNI protocol
- be aware of any changes in protocol by reading and initialing memo binder
- must read protocol manual at least once a year and use as reference source
- ensure copy of current license and education log are present in each facility worked and copy sent to Supervisor

- be informed and inform supervisor of any schedule change
- keep current by participating in technical education
- completed patient surveys must be forwarded to head office supervisor on a monthly basis
- keep in good standing with CMRITO
- Keep CME's up to date
- perform quarterly technologist peer review

Charge Technologists:

- in addition to the above duties, charge technologists are responsible for:
- the overall running of their clinic
- ensure that scheduled preventative maintenance and quality control is performed on all equipment
- prepare monthly medical supply order form for all required supplies
- reporting to/advising direct supervisors, QA Advisor and Radiologists
- training for quality controls, IPAC, radiation safety
- equipment records
- ensuring infection controls
- patient reports

Appendix H

X-RAY TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
ORIENTATION:	**Staff Initials**	**Trainer Initials**
Tour of facility-locate reception/waiting room/x-ray rooms/fire exits/fire extinguishers		
Locate supplies (procedure supplies, linen, cleaning supplies)		
PACS/RIS (logins, navigation, procedure)		
Familiarize with requisitions/clinical forms		
Imaging protocols		
Know your H&S representative		
Locate H&S board, department manuals (WHMIS, SDS, OADA, Infection control, etc)		
Complete required tests (WHMIS, OADA, H&S, IPAC, Workplace Violence, etc) and ensure these are completed annually		
Site Policies and Procedures		
Locate Radiologist/PACS Admin/Supervisors contact information		
CORE SKILLS:		
You were taught to use the equipment to perform your job		
Workflow, what supplies are needed, daily worksheets and expectations		
Read P&P manual ie: Radiography Protocols		
Locate service numbers and system ID numbers for equipment		
Greet patients and correlate patient identification		
Interpret requisition accurately and obtain accurate history/assessment		
Show patient to change room, instruct patient to change into exam gown, instruct to remove jewelry or anything that may appear as an artifact (hair ties, clothing with buttons, zippers or thick clothing)		
Instruct patient properly (breathing, explanation of procedure, etc)		
Position patient correctly for each procedure		
Let patient know that their doctor will receive a report in 24-48 hours		
Utilize the ALARA principle		
Utilize appropriate labeling of images		
Select appropriate procedure		
Select suitable imaging parameters		
Document number of views on bag label		
Use physical markers (lt or rt, bb markers for area of concern)		
Use proper shielding when appropriate (gonadal, thyroid collar, etc)		
Ask female patients of child bearing years if pregnant (observe the 10 days rule)		
Contact radiologist prior to patient leaving for urgent matters (pleural effusions, pneumothorax, obvious fractures, suspicious masses, etc)		
Learn process on how to deal with STAT cases - which rad to call		
Clean room and equipment after each patient		
Ensure all images have been sent to PACS and completed to correct radiologist		
Ensure related previous reports/images are available and viewed		
Able to add/remove procedures in RIS		
Learn and perform all QA testing (daily, weekly, monthly, annual testing)		

RADIOGRAPHIC SKILLS: Trainers must ensure that the new employee can demonstrate and identify both normal & abnormal findings for each modality and are performing and following protocols as outlined in TNI Radiography Protocols. They must also ensure that the new employee is properly positioning, shielding, collimating and following the ALARA principle prior to imaging on their own.	**YES**	**NO**
GENERAL X-RAY (following protocols for adults/children)		
HEAD/NECK:		
Skull		
Facial Bones		
Sinuses (not covered by OHIP, confirm if patient wants to pay)		
Mandible		
Temporomandibular Joints		
Mastoids		
Nasal Bones		
Orbits (for foreign body, for Pre-MRI, for fracture)		
Salivary Glands (Parotid, submandibular)		
Neck for Soft Tissue (to include adenoids)		
VERTEBRAL COLUMN:		
Cervical Spine		
Thoracic Spine		
Lumbar Spine		
Sacrum		
Coccyx		
Sacroiliac Joints		
Spine for Scoliosis		
Pelvis and Hips		
LOWER EXTREMITIES:		
Femur		
Knees		
Tibia/Fibula		
Ankle		
Foot		
Toes		
Calcaneus		
UPPER EXTREMITIES		
Shoulder		
Clavicle		
Scapula		
Sternoclavicular Joints		
Acromioclavicular Joints		
Humerus		
Elbow		
Forearm		
Wrist		
Carpal Tunnel		
Hand		
Finger/Thumb		

CHEST/THORAX:		
Chest		
Ribs		
Sternum		
ABDOMEN:		
Abdomen - KUB		
Abdomen - Acute		
Abdomen - IUD		
SKELETAL SURVEYS:		
Bone Age		
Skeletal Survey - Suspected Abuse (child)		
Arthritis/Rheumatoid		
Metastatic Lesion/Myeloma		

MRT - MAMMOGRAPHER JOB DESCRIPTION

As integral members of our health care team, all radiographers are expected to produce, in accordance with TNI protocols, the **highest quality** of diagnostic images in combination with **optimal** patient care. At all times, our staff is to employ professional judgment, discretion and adhere to the professional code of conduct in order to protect the rights and privacy of the patient.

Daily Responsibilities:

- must obtain appropriate credentials in order to be a CAR approved mammographer (mammo 1, mammo 2, CBI, etc.)
- must maintain CME relating to mammography
- obtain imaging requisition and confirm its complete
- ensure females are not pregnant and document on bag label
- obtain necessary clinical history and document on bag label
- locate any previous images related to the current study
- perform physician requested exam in accordance to company protocol
- ensure patient has removed deodorant/antiperspirant
- ensure appropriate patient questionnaire is completed by patient
- anticipate and respond to needs of patient
- explain the mammography procedure clearly to each patient and explain to them that you will be touching their body throughout the exam, for positioning purposes
- must obtain verbal consent
- answer patient questions to the best of your ability without rendering a medical diagnosis
- assure patient that study will be reported promptly and sent to referring physician
- adequately protect patient and minimize exposure to ionizing radiation using the ALARA principle
- ensure door is properly closed
- determine exposure factors
- ensure that all structures are well demonstrated and critique for image quality and accuracy
- verbally inform referring physician of any significant abnormality
- clean and maintain equipment in accordance with TNI protocols; maintain infection control as per company policy
- follow quality assurance procedures as set out by TNI guidelines
- ensure clinic is neat and clean at all times
- be of assistance to co-workers
- be able to employ emergency procedures as necessary
- be able to utilize all office systems and procedures
- must read WHMIS training manual package annually and take online test annually

Related Responsibilities:

- maintain all records and reports (e.g., repair, patient incident) in accordance with TNI protocol
- be aware of any changes in protocol by reading and initialing memo binder
- must read protocol manual at least once a year and use as reference source
- ensure copy of current license and education log are present in each facility worked and copy sent to head office supervisor
- be informed and inform supervisor of any schedule change
- keep current by participating in technical education
- completed patient surveys must be forwarded to head office supervisor on a monthly basis
- keep in good standing with CMRITO
- keep CME's up to date
- perform quarterly technologist peer review

Charge Technologists:

- in addition to the above duties, charge technologists are responsible for:
- the overall running of their clinic
- ensure that scheduled preventative maintenance and quality control is performed on all equipment
- prepare monthly medical supply order form for all required supplies
- reporting to/advising direct supervisor, Quality Assurance Advisor and radiologists
- training for quality controls, IPAC, radiation safety
- equipment records
- ensuring infection control
- patient reports

Appendix I

MAMMOGRAPHER TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
ORIENTATION:	**Staff Initials**	**Trainer Initials**
Tour of facility - locate reception/waiting area/exam rooms/fire exits and fire extinguishers		
Locate supplies (procedure supplies, linen, cleaning supplies)		
PACS/RIS (logins, navigation, procedures)		
Familiarize with requisitions/clinical forms/patient questionnaires		
Imaging protocols		
Know your H&S representative		
Locate H&S board, department manuals (WHMIS, SDS, OADA, Infection Control, etc)		
Complete required tests (WHMIS, OADA, H&S, IPAC, Workplace Violence, etc) ensure these are completed annually		
Site policies and procedures		
Locate Radiologist/PACS Admin/Supervisors contact information		
CORE SKILLS:		
You were taught to use the mammography equipment to perform your job		
Workflow, what supplies are needed, patient questionnaires, expectations		
Read P&P manual ie: mammogram protocols		
Know how to view images		
Locate service numbers and system ID numbers		
Know when and how to use x-ray shielding ie: thyroid		
Greet patient - Check that the patient's name, DOB, referring doctor is correct		
Interpret requisition accurately and obtain accurate history/assessment		
Show patient to change room, instruct patient to change into exam gown, instruct patient to wipe off deodorant if necessary		
Able to find and view previous images/reports		
Instruct patient properly (breathing, positioning, explanation of procedure, etc)		
Direct the patient to mammo room, show then how to exit the department		
Let patient know that their doctor will receive a report in 24-48 hours		
Learn process on how to deal with STAT cases - which Rad to call		
Utilize the ALARA principles		
Utilize appropriate labeling of images		
Clean room and equipment after each patient		
MAMMOGRAPHIC SKILLS: Trainers must ensure that the new employee can demonstrate and identify both normal & abnormal findings and are performing and following protocols as outlined in TNI Mammography Protocols. They must also ensure that the new employee is properly positioning, shielding, using coned compression/magnification views when necessary and following the ALARA principles prior to imaging on their own.	**YES**	**NO**
Ensure all views are identified with correct positioning markers (ie-LCC,RCC, LMLO, RMLO, etc)		

Ensure skin markers are used to identify location of skin tags, scars, palpable masses, et.		
Ensure nipple markers are used		
Demonstrate and identify normal and abnormal findings on Left CC view		
Demonstrate and identify normal and abnormal findings on Right CC view		
Demonstrate and identify normal and abnormal findings on Left MLO view		
Demonstrate and identify normal and abnormal finding on Right MLO view		
Identifies need for additional work up (coned compression/magnification views)		
Performed and understands protocols for mastectomy patients		
Performed and understand protocols for patients with implants (Eklund views)		

MRT - BONE MINERAL DENSITOMETRY TECHNOLOGIST JOB DESCRIPTION

As integral members of our health care team, all radiographers are expected to produce, in accordance with TNI protocols, the **highest quality** of diagnostic images in combination with **optimal** patient care. At all times, our staff is to employ professional judgment, discretion and adhere to the professional code of conduct in order to protect the rights and privacy of the patient.

Daily Responsibilities:

- must obtain and maintain certification and CME to meet CPSO and OAR credentialing
- must complete and maintain precision testing
- obtain imaging requisition and confirm its complete
- ensure females are not pregnant and document on bag label
- obtain necessary clinical history and document on bag label
- locate any previous images related to the current study
- perform physician requested exam in accordance to company protocol
- ensure patient has not taken calcium the day of the exam
- ensure appropriate patient questionnaire is completed by patient
- anticipate and respond to needs of patient
- explain the procedure clearly to each patient and explain to them that you will be touching their body throughout the exam, to locate x-ray landmarks
- must obtain verbal consent
- answer patient questions to the best of your ability without rendering a medical diagnosis
- assure patient that study will be reported promptly and sent to referring physician
- adequately protect patient and minimize exposure to ionizing radiation using the ALARA principle
- ensure door is properly closed
- determine exposure factors
- ensure that all structures are well demonstrated and critique for image quality and accuracy
- verbally inform referring physician of any significant abnormality
- clean and maintain equipment in accordance with TNI protocols; maintain infection control as per company policy
- follow quality assurance procedures as set out by TNI guidelines
- ensure clinic is neat and clean at all times
- be of assistance to co-workers
- be able to employ emergency procedures as necessary
- be able to utilize all office systems and procedures
- must read WHMIS training manual package annually and take online test annually

Related Responsibilities:

- maintain all records and reports (e.g. repair, patient incident) in accordance with TNI protocol
- be aware of any changes in protocol by reading and initialing memo binder
- must read protocol manual at least once a year and use as reference source
- ensure copy of current license and education log are present in each facility worked and copy sent to head office supervisor
- be informed and inform supervisor of any schedule change
- keep current by participating in technical education
- completed patient surveys must be forwarded to head office supervisor on a monthly basis

Charge Technologists:

- in addition to the above duties, charge technologists are responsible for the overall running of their clinic
- ensure that scheduled preventative maintenance and quality control is performed on all equipment
- prepare monthly medical supply order form for all required supplies
- reporting to/advising direct supervisor, Quality Assurance Advisor and radiologists
- training for quality controls, IPAC, radiation safety
- equipment records
- ensuring infection control
- patient reports

Appendix J

BMD TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
FAMILIARITY WITH THE CLINIC:	**Staff Initials**	**Trainer Initials**
Tour of facility- locate reception/waiting area/BMD room/fire exits/fire extinguishers		
Locate supplies (procedure supplies, linen, cleaning supplies)		
PACS/RIS (logins, navigation, procedures)		
Familiarize with requisitions, clinical forms, patient questionnaires		
Know your H&S representative		
Locate H&S board, department manuals, (WHMIS, SDS, OADA, Infection Control, etc)		
Complete required tests (WHMIS, OADA, H&S, IPAC, Workplace Violence, etc.) and ensure these are completed annually		
Site Policies and Procedures		
Locate Radiologist/PACS Admin/Supervisors contact information		
CORE SKILLS:		
You were taught to use the BMD equipment to perform your job		
Workflow, what supplies are needed, daily worksheets and expectations		
Read P&P manual ie: BMD protocols		
know the imaging protocols / Know how to view previous		
Locate service numbers and system ID numbers		
know the weight limit for the BMD unit		
Greet patient - Check that the patient's name, DOB, referring doctor is correct		
Interpret requisition accurately and obtain accurate history/assessment		
Show patient to change room, instruct patient to change into exam gown if necessary, have patient remove jewelry, underwire bra, thick clothing		
Direct the patient to BMD room, show them how to exit the department		
Instruct the patient properly, explanation of procedure, etc.		
Position patient correctly		
Utilize the ALARA principle		
Learn process on how to deal with STAT cases - which Rad to call		
Clean room and equipment after each patient		
Ensure all images have been sent to PACS and completed to correct radiologist		
BMD SKILLS - Trainers must ensure that the new employee can demonstrate and identify both normal/abnormal findings and are performing and following protocols as outlined in TNI BMD Protocols. They must also ensure that the new employee is properly positioning and following the ALARA principles prior to imaging on their own.	**YES**	**NO**
Performs and documents daily QA procedures (QA block, spine phantom)		
Ensures patient questionnaire is completed accurately and all information is subsequently entered into patients file		
Ensures height and weight protocols are followed (average of 3 measurements)		
Ensures proper positioning		
Performs/analyzes appropriate scans (Spine, Femur, hip, forearm)		
Understands/performs Shewart chart		
Acquired personal precision testing		

PACS ADMINISTRATOR JOB DESCRIPTION

As integral members of our health care team, all PACS administrators must serve as a point of contact for the further development and improvement of our system in our medical facility. They also manage all updates to a system. This often includes managing supplier relationships in the context of expanding and maintaining the technology.

Day to day tasks of a PACS Administrator:

- Maintaining, managing, and troubleshooting of the PACS system
- Managing and implementing the storage of all received digital images from a variety of sources to build and maintain routing solutions for diagnostic images
- Developing and planning strategies, and providing technical support
- Training end-users and designing programs to improve management of the system
- Serving as a point of contact for the further development and improvement of a system in a medical facility
- Support multiple systems such as InteleRad PACS and DICOM Systems.
- Install, configure and administer the connection of modalities in the existing network
- Jointly responsible for the administration of user profiles
- Managing the updating and archiving of image data
- Managing supplier relationships and maintaining technology
- Collaborate with the IT infrastructure team to communicate storage and compute needs for the PACS application

Skills required:

- Master the basics of medical technology
- Knowledge of the HL7 / DICOM standard in theory and practice
- Basic knowledge of database structures and can create database queries (e.g. SQL)
- Basic knowledge of current server operating systems, virtual environments and networks as well as the safe handling of client hardware / software
- Understanding of diagnostic images and workflows with Hospital Information Systems (HIS) and Radiological Information Systems (RIS)
- Working knowledge of VPN (virtual private network) and NAT (network address translation) technologies
- Structured and independent way of working
- Strong team player and the willingness for further training
- Good written and spoken communication skills

Appendix K

PACS ADMINISTRATOR TRAINING CHECKLIST: ***DATE: _____***		
New Staff Member Name:		
Staff name conducting orientation:		
FAMILIARITY WITH THE CLINICS:	**Staff Initials**	**Trainer Initials**
Tour of all TNI facilities given/locate all exits and emergency exits in each facility		
Read the fire procedure policy/ review the fire escape route plan		
know where to locate supplies, if needed		
you were shown where to locate PPE in each facility if needed		
introduced the admin lead at each facility and given contact #'s		
Relevant to perform duties:		
maintaining, managing, and troubleshooting of the PACS system		
manage storage of all digital images		
shown how to customize worklist management		
configure hanging protocols		
technologist training		
understand HIPAA privacy		
learning influencing skills		
developing tools for infrequent users		
implementing speech recognition		
creating computer based training		
learn Radiologist workflow		
workflow analysis		
Technologist workflow		
modality workflow		
RIS-PACS dictation integration		
understanding change in management		
workstation design in/out radiology		
risk assessment		
developing user support policies		
defining objectives		
OCCUPATIONAL HEALTH & SAFETY:		
Know where the Health & Safety board, WHMIS, SDS, AODA manuals etc…		
know the Health & Safety rep. for each site		
Know where to find PPE		
IPAC courses done annually - know how to conduct risk assessment		

COVID-19 Screener Job Description

As integral members of our health care team, all COVID-19 Screeners are expected to perform their duties in a courteous, professional manner. At all times our staff is to employ professional judgment, discretion and adhere to the True North Imaging Code of Conduct in order to protect the rights and privacy of each patient.

Daily Responsibilities:

- Greet patient – promptly and in a professional manner
- Ensure patients are taken in a timely manner
- Provide the patient with the COVID-19 Screening From
- Take the patient's temperature and make sure it is recorded on the screening form
- Verify the patient has answered **NO** to all of the screening questions and the screening form is complete
- Ask the patient if they have their requisition:
    - If they have a physical copy make sure it has been adequately filled out
    - If they have an electronic version; provide them with the QR Code to upload their requisition
- Confirm the patient has prepared for the examination
- Refer patient to receptionist for check-in
- Sanitize pens, clipboards, counters and any touch points between each patient
- Sanitize chairs once patient has been called for examination and before another patient is seated
- Monitor the waiting area and make sure it does not exceed capacity limits (2-metre distance between each patient)
- Monitor patients in the waiting area and ensure proper masking protocol (mask is covering mouth and nose)
- Monitor the waiting line to ensure physical distancing

Appendix L

COVID 19 SCREENER TRAINING CHECKLIST:	***DATE: _____***	
New Staff Member Name:		
Staff name conducting orientation:		
FAMILIARITY WITH THE CLINIC:	**Staff Initials**	**Trainer Initials**
Tour of facility given/locate all exits and emergency exits in facility		
Read the fire procedure policy/ review the fire escape route plan		
know where to locate supplies/ know what supplies are needed for your job		
know where to find appropriate PPE		
PATIENT PROTOCOLS:		
Greet patient in a friendly timely manner		
Ensure that the patient has completed the COVID screening form		
Record the patient's temperature on the screening form		
Ensure patient has respond NO to all questions prior to allowing entrance into the facility		
know how to deal with patients that have symptoms		
clean all used supplies between patient use		
clean waiting room chairs, door handles and light switches as needed throughout the day		
OCCUPATIONAL HEALTH & SAFETY:		
Know where the Health & Safety board, WHMIS, SDS, AODA manuals etc…		
know your Health & Safety rep.		
Know where to find PPE		
IPAC courses done annually - instruction given how to wear PPE and what PPE to wear to ensure a safe work environment		

RADIOLOGIST PEER REVIEW

In our demanding and busy work environment it is important that Quality Assurance (QA) is integrated seamlessly into our workflow. Peer review is an important component of radiologist performance assessment. Despite high levels of training and expertise it will still be possible for radiologic discrepancy to occur even in the best settings.

Peer review aims to improve overall standards by defining unperceived discrepancies and educational needs within the subject group. In this way, radiologists can start to contribute to the health care revolution of the early twenty-first century that will be one of improved patient safety and outcomes.

Peer review is ideal for measuring radiologists' skills as it essentially evaluates the end product of our work by having a colleague reviewer correlate an exam with his/her peer's report.

Methods

True North Imaging will be using The American College of Radiology's RADPEERTM program as a workstation-integrated peer review system effective from May 2016 (See table 1)

Table 1. RADPEER Scoring System (Effective May 2016) – From Journal of the American College of Radiology Volume 14 Number 8 August 2017

- Case assigned for peer review will be randomly selected from exams and procedures representative of the actual clinical practice of each radiologist.
- Each radiologist is notified of and responsible for cases assigned for review and assessment of agreement with the original exam report.
- Agreement with the original report will be classified on a 4-point scale (see Peer Review Scoring and Algorithm)
- Summary data at the end of each month will be sent to the VP Operations and each radiologist will be spoken to confidentially about their reviewed reports. All data will be kept on an excel spreadsheet and added to monthly.
- TNI QA has access to review details of all peer review assessments performed by radiologists on a monthly basis. QA is responsible for:

  (i) Reviewing peer review data

  (ii) Reviewing on an urgent basis **all level 3 and 4 cases** in conjunction with an alternative reviewer (if necessary) to confirm or refute the original grading and escalate as required.

In scenarios where a major discrepancy is identified through the Radiologist peer review, the ICHSC QA will review the case. **If it is confirmed to be a level 3 or 4 and the ICHSC QA cannot reach a consensus, it will be evaluated with an alternative reviewer.** The results of the Radiologist peer review program will be discussed at QAC meetings that take place four times a year.

Through the course of normal daily work or during the peer review process, if a potential incident is discovered, the appropriate processes must be followed.

Revised 24/03/2025

Peer Review Scoring and Algorithm

Score	Meaning	Optional
1	Concur with interpretation	
2	Discrepancy in interpretation/ not ordinarily expected to be made (understandable miss)	a. Unlikely to be clinically significant b. Likely to be clinically significant
3	Discrepancy in interpretation/ should be made most of the time	a. Unlikely to be clinically significant b. Likely to be clinically significant
4	Discrepancy in interpretation/should be made almost every time - misinterpretation of finding	a. unlikely to be clinically significant b. Likely to be clinically significant

Selection of Cases

All radiologists will be given 10 ultrasound cases plus 5 Nuchal Translucency to review each month. Please use the NT Audit Form (page 45) when reviewing the Nuchal Translucency exams.

Physicians who read Bone density, radiography and mammography will be peer reviewed in their respective modalities. In each of these modalities, 5 cases per month will be peer reviewed.

Radiologists will not know who is assigned to read their cases. They will only know the identity of the physician they will be reviewing once the cases are given to the assessor. Cases will be assigned randomly by True North Imaging's VP Operations to a radiologist until we are able to build in a peer review software that can be programmed to perform random selection of cases.

Cases are then assigned to the radiologist, who was not the initial reader, randomly during the workday. Those cases are then scored on the agreed upon scale.

As noted in the CAR GUIDE TO PEER REVIEW SYSTEMS (approved September 10, 2011 and amended July 16, 2012), there is no consensus or evidence-base regarding the required percentage of studies to be reviewed. However, crucial to this metric is the need to respect radiologist workflow and time constraints that puts an absolute limit on the retrospective method.

TRUE NORTH IMAGING RAD PEER REVIEW **RADIOLOGIST INITIALS:_____**

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10
Modality										
Accession #										
Exam Date										
Exam Type										
Exam clinically indicated?										
Supplemental Clinical History										
Technical factors documented										
Technologist name documented										
Proper positioning (modality specific)										
Questionnaire completed (modality specific)										
Diagnostic Images/views										
Findings documented										
Comparison with previous (if available)										
Diagnosis documented										
Follow up suggested where applicable										
Report signed off										
Comments										

Revised 24/03/2025

TRUE NORTH IMAGING NUCHAL TRANSLUCENCY AUDIT FORM **RADIOLOGIST INITIALS:_____**

	Case 1	Case 2	Case 3	Case 4	Case 5
Accession Number					
Examination Date					
Examination Clinically Indicated					
Correct size of fetus: CRL 44.0 - 84.0 mm					
Fetal Head Position: Neutral position, fetal head should be floating free of the uterine wall.					
Imaging Magnification: Fetal head and upper thorax in image only					
Mid sagittal image: Tip of nose, palate rectangular shape (no vertical maxilla bone), translucent diencephalon, nuchal translucency separate from amion					
Nasal Bone: Seen separately from skin surface, thicker and brighter than skin surface					
Caliper Placement: Placed within the hyperechoic edges, perpendicular to NT, widest part of NT, at least 3 measurements with largest measurement recorded					
Comments					

Revised 24/05/2025

TECHNOLOGIST PEER REVIEW

In our demanding and busy work environment it is important that Quality Assurance (QA) is integrated seamlessly into our workflow. Peer review is an important component of Diagnostic Medical Sonographers (DMS) and Medical Radiation Technologists (MRT) performance assessment. Despite high levels of training and expertise it will still be possible for DMS and MRT discrepancy to occur even in the best settings.

Peer review aims to improve overall standards by defining unperceived discrepancies and educational needs within the subject group. In this way, technologists can start to contribute to the health care revolution of the early twenty-first century that will be one of improved patient safety and outcomes.

Peer review is ideal for measuring technologist's skills as it essentially evaluates the end product of our work by having a colleague reviewer correlate an exam with his/her peer's report.

The True North Imaging Peer Review is based on the CPSO Technical Observation sheet and the CPSO Image Review sheets.

- Non- punitive, ongoing learning focus
- Second review (2 technologists interpreting the same study) assessment
- Technologists performing a follow up study may peer review the prior case as long as it is a different technologist evaluating the study
- Exams and procedures representative of the actual clinical practice of each technologist
- Classification of peer review findings (Meets, Does Not Meet, Comments)
- Policies and procedures for action taken in the event of significantly discrepant peer review are defined

The True North Imaging Peer Review Program will assess 3 cases quarterly. This will encompass all licensed modalities and all actively imaging technologists in: **Radiography, Mammography, Bone Mineral Densitometry, General Ultrasound and OB/GYN Ultrasound.**

Participation in the TNI Peer Review Program is an expectation of all TNI technical staff.

Peer Review Process:

The TNI Peer Review Program process includes the following features:

- Cases assigned for peer review will be randomly selected from exams and procedures representative of the actual clinical practice of each technologist in their modality.
- Technologists performing follow up studies may peer review the prior case if it is a different technologist evaluating the study.
- Agreement with the original examination will be classified as **Meets, Does not meet** and provide **"Comments"** on either classification as needed.

The ICHSC QA will be provided with details of all peer review assessments performed by technologists on a monthly basis.

Revised 24/03/2025

Technologist Peer Review Scoring:

The classification of agreement with the original examination will be classified with the following criteria:

MEETS (YES)
DOES NOT MEET (NO)
COMMENTS

In scenarios where a major discrepancy is identified through the Technologist peer review, the ICHSC QA (or radiologist delegate) will review the case. The results of the Technologist Peer Review program will be discussed at QAC meetings that take place four times a year.

Through the course of normal daily work or during the peer review process, if a potential incident is discovered, the appropriate process must be followed.

References:

Please see attached Image Review and Technical Observation Forms

TNI DMS TECHNOLOGIST PEER REVIEW

DATE:_____ ASSESSOR NAME:_____

	Case 1	Case 2	Case 3
Accession number			
Exam date			
Exam type			
Correct technologist worksheet?			
Exam clinically indicated?			
Is the physician interpretation complete as per AC IHSC Diagnostic standards?			
Diagnostic image quality?			
Technologist impression includes:			
Supplemental clinical history			
Complete preliminary findings			
Complete description of any variants or abnormalities seen			
Enough images to make a diagnosis			
Technologists name			
Comments:			

Revised 24/03/2025

TNI MRT TECHNOLOGIST PEER REVIEW

DATE:_____ ASSESSOR:_____

	Case 1	Case 2	Case 3
Accession number			
Exam type			
Exam date			
Exam clinically indicated?			
Sufficient views for the requested anatomy?			
Visible correct markers?		**N/A**	
Diagnostic image quality?			
Proper positioning?			
Questionnaires completed & signed?	**N/A**		
Technologist name documented?			
MRT signed requisition?			
Lead documented?		**N/A**	
Visible proper collimation?		**N/A**	
Technical factors recorded?			
If present, deformities documented?	**N/A**		**N/A**
Absolute bone density values	**N/A**		**N/A**
"T" score	**N/A**		**N/A**
Relative fracture risk	**N/A**		**N/A**
Significance of change from previous & baseline			
Mammogram correlate with known physical findings?	**N/A**	**N/A**	
Previous available for comparison?			
Comments:			

Reviewed 24/03/25

MEMBER CODE of ETHICS & PROFESSIONAL CONDUCT

The Code of Ethics is a set of principles that delineates responsible conduct and the ethical and moral behavior of members of the College of Medical Radiation Technologists of Ontario (CMRITO or the "College"). It has as its foremost goal the welfare and protection of patients and the public. The Code of Ethics provides direction and guidance for all members of the College in the province of Ontario, including MRT's (Medical Radiation Technologists) and DMS (Diagnostic Medical Sonographers).

The Code of Ethics shall serve as a guide by which members may evaluate their professional conduct as it relates to patients, health care consumers, employers, colleagues, and other members of the health care team. It is meant to serve not only members who provide clinical services, but also managers and educators who may be called upon to make judgements about ethical issues. It will also serve College Committees that may be called upon to make judgements about ethical issues in determining professional misconduct, incompetence, or incapacity.

The Code of Ethics is intended to help members choose the right, fair, good and just action. Each member is personally responsible for behaving according to the ethical principles set down in the Code.

The consideration of ethical issues is an essential component of providing service. The Code of Ethics is to be used in conjunction with the College's Standards of Practice. Together, these documents provide a model for ensuring safe, effective, and ethical professional performance to ensure safe, effective, and ethical outcomes for patients.

ETHICAL PRINCIPLES

1. **Responsibility to the Public**

Members act to ensure the trust and respect of the public by:

INDICATORS:

a. maintaining high standards of professional conduct, competence, and appearance
b. providing only those services for which they are qualified by education, training, or experience
c. not making false, misleading, or deceptive statements, orally or in writing
d. advancing and supporting health promotion and research

2. **Responsibility to Patients**

Members act in the best interest of their patients by:

INDICATORS:

a. upholding the principle of informed consent including the right of the patient, or the patient's substitute decision maker, to refuse service
b. respecting the dignity, privacy, and autonomy of their patients
c. maintaining clear and appropriate professional boundaries in the MRT/DMS – patient relationship

d. treating all patients equitably, regardless of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, gender identity, gender expression, age, marital status, family status, disability, or type of illness
e. providing individualized, comprehensive, and safe treatment during examinations, taking into account the patient's particular physical and emotional needs, values, and cultural background
f. preserving and protecting the confidentiality of information acquired through professional contact with the patient, except to facilitate diagnosis or treatment of the patient, or when legally obliged or allowed to disclose such information

3. **Responsibility to the Profession**

Members promote excellence in the profession by:

INDICATORS:

a. assisting each other and the CMRITO in upholding the spirit and the letter of the law, the *Regulated Health Professions* and *Medical Radiation Technology Acts*, their respective regulations and the standards of practice set by the CMRITO
b. contributing to the development of the art and science of the profession through continuing education and research
c. conducting all professional activities, programs, and relations honestly and responsibly, and by avoiding any actions that might discredit the profession

4. **Responsibility to colleagues and other health professionals**

Members develop and maintain positive, collaborative relationships with colleagues and other health professionals by:

INDICATORS

a. consulting with, referring to and cooperating with other professionals to the extent needed to serve the best interests of their patients
b. ensuring the safety of other health professionals when in practice or in areas under the members responsibility
c. educating colleagues and other health professionals about practices and procedures relating to the profession

5. **Personal Responsibility**

Members are accountable for all of their professional undertakings and shall:

INDICATORS

a. aspire to a high level of professional efficacy at all times
b. maintain and apply current and relevant scientific and professional knowledge and skill in every aspect of practice
c. avoid conflict of interest
d. provide professional service only when free from the influence of alcohol, drugs or other substance or any condition that might impede the delivery of safe service

CODE OF CONDUCT

INTRODUCTION:

1. The Code of Conduct is provided as advice and guidance to our Members practicing the Profession and to those who are training to become certified to practice.

2. The Code of Conduct is designed to complement the Code of Ethics of the Association, the Standards of Practice of the College of Medical Radiation Technologists of Ontario (CMRITO), and their professional conduct regulations.

CODE:

3. The Code of Conduct recommended for the Profession is as follows:

   a. Members must hold in confidence any information obtained about a patient in the performance of their duties consistent with the requirements of the workplace, the CMRITO and legislation.
   b. Members must not engage in, or condone behavior, which causes unnecessary mental, physical distress or loss of dignity, privacy or autonomy to the patient, their relatives or friends. In doing this, Members will have at all times regard for their physical, psychological, cultural and spiritual needs of patients.
   c. Members have a responsibility to promote and safeguard the well-being and safety of their patients at all times for whom they are professionally accountable, by ensuring that no act or omission on their part places the patient at risk or in harm's way.
   d. Members must empower, support and enable patients to make their own informed decisions about the nature and progress of their examination or treatment.
   e. Members are expected to meet standards of personal integrity and shall avoid the abuse of their status with their patients, their relatives and friends.
   f. Members shall comply with and be accountable to the laws of the country, province and municipality in which they practice, acting in such a manner as to justify public trust and confidence to uphold and strengthen the profession in the eyes of the public.
   g. Members must never be under the influence of any toxic substances, which impairs the performance of their duties.
   h. Members should work in a collaborative and cooperative manner with other Members of the healthcare team.
   i. The Members must make every reasonable effort to sustain and expand their knowledge and professional competence and consider their personal and professional needs by developing a professional portfolio.
   j. The Members should develop their professional role not only within the workplace, but within the Profession itself to advance the practice of the Profession.
   k. The Member shall practice their Profession only on those who have been referred appropriately by a qualified, authorized health care provider.
   l. The Member shall practice only the Discipline or a sub-specialty for which she/he has received the appropriate training and/or achieved the required qualifications.
   m. The Member shall take reasonable steps when dealing with the media. The information given to the media is such that the profession is represented in an objective and credible manner.
   n. The Member shall participate in teaching OAMRT Students when applicable; reinforcing the Code of Ethics, Code of Conduct and the CMRITO's Standards of Practice, maintaining and advancing the Profession, assisting in investigating new and innovative aspects of professional practice and promoting the Professional and health care in general.

Ontario Association of Medical Radiation Technologists

Appendix M

TRUE NORTH IMAGING

EMPLOYEE CONFIDENTIALITY AGREEMENT (the "Agreement")

In consideration of, and as a condition of my employment with Clearview Diagnostic Imaging Limited operating as True North Imaging ("TNI"), I, the undersigned, hereby agree as follows:

Definitions

In this Agreement, the following terms have the following meanings:

"Confidential Information" means any information disclosed to, acquired, or learned by me in the course of or as a consequence of my employment with TNI that is not generally known to the public. Confidential Information includes, but is not limited to: (a) Personal Health Information; (b) financial data and information; (c) supply and service information, including but not limited to, information about potential suppliers, vendors and referral sources; (d) marketing information; and (e) personnel information.

"Personal Health Information" means as such term is defined in Ontario's ***Personal Health Information Protection Act 2004*** and its regulations as may be amended or replaced – and includes, but is not limited to identifying information about an individual in oral or recorded form, if the information (a) relates to the physical or mental health of the individual including medical history; (b) relates to the providing of health care to the individual including diagnostic/laboratory results; (c) relates to payments or eligibility for health care including insurance and OHIP information or (d) is the individual's health number.

Duties Regarding Confidential information (including Personal Health Information)

I acknowledge and agree that I will have access to or obtain Confidential Information in the course of my employment with TNI and I understand and agree to abide by the following duties which are fair and reasonable:

- *Protection of Confidential Information* – All Confidential Information whether it is created, developed or contributed by me during the period of my employment with TNI or by others employed or engaged by or associated with TNI, is the exclusive and confidential property of TNI or its patients, as the case may be, and will at all times be regarded, treated and protected that way, as provided in this Agreement.

- *Non-Disclosure* – At all times during and subsequent to my employment with TNI, I will not disclose confidential information to any person or entity (other than as reasonably necessary in carrying out my duties on behalf of TNI) without first obtaining TNI's consent (and the patient's consent where applicable). I will take all reasonable precautions to prevent inadvertent disclosure of any Confidential Information, including but not limited to keeping all computer access codes/passwords confidential and secure (e.g., regularly change passwords, use secure passwords and not disclose or share passwords) and properly securing all physical access devices (e.g., keys and badges).

- *Using/Copying* – At all times during and subsequent to my employment with TNI, I will not use, copy, transfer or destroy any Confidential Information (other than as necessary in carrying out my duties on behalf of TNI) without first obtaining TNI's consent (and the patient's consent where applicable), and I will take all reasonable precautions to prevent inadvertent use, copying, transfer or destruction of any confidential information. Without limiting the foregoing, to the extent that I am required to copy or transfer Personal Health Information I will comply with all applicable policies and best practices related to encryption of such information.

- *Return of Confidential Information* – Within five days after the cessation of my employment by TNI for any reason, or sooner following the receipt by me of TNI's request, I will promptly deliver to TNI all property of or belonging to or administered by TNI or for which TNI is liable to others, including without limitation all Confidential Information that is embodied in any physical or electronic form, whether in hard copy or on magnetic media, and that is within my possession or under my control.

Nothing in this Agreement will prohibit me from complying with any applicable law or court order provided that if I am required to disclose any confidential information pursuant to any applicable law or a court order. I agree that before any disclosure is made, I will give TNI notice of the requirement where it is within my control to give such notice so that, to the extent possible in the circumstances, TNI will have an opportunity to dispute the requirements.

I confirm that I have read, understand and after having had a reasonable opportunity to obtain independent legal advice, voluntarily agree to my duties as outlined above and further understand and agree that my failure to comply with these duties and/or my failure to comply with any applicable TNI policies and procedures on privacy, confidentiality and security, as may be amended from time to time, may result in discipline, up to and including the termination of my employment.

_____	_____
Name (print)	Witness Name (print)
_____	_____
Signature	Witness Signature
_____	_____
Date	Date

Appendix N

Social Media Personal Use Policy

INTENT

True North Imaging strives to maintain a positive image in the community and has adopted this policy to ensure that our employees are aware of their responsibility to maintain a positive image as a representative of our organization. True North Imaging **employees that maintain personal social media pages (e.g. Facebook, LinkedIn, Blogs, Twitter, Four-Square, Instagram, etc.) are expected to comply with the guidelines set out within this policy.**

We would like to take this time to remind our employees that they continue to act as representatives of this organization outside of regular business hours and should conduct themselves in an appropriate manner.

POLICY

True North Imaging employees that maintain personal social media pages or accounts are required to comply with the following guidelines as they relate to their association with True North Imaging.

1. Where an employee uses social media during regular working hours, this use shall not have a negative impact on user productivity or efficiency. As internet access at True North Imaging may be monitored, please be advised that excessive use of social media for personal reasons is a misappropriation of company time and resources and may be subject to disciplinary action.
2. Use of personal social media may not conflict with any of True North Imaging's existing policies whatsoever. This includes (but is not limited to) the Employee Confidentiality Agreement.
3. Employees that use these sites are prohibited from disseminating any private organizational information therein, or any negative comments regarding the organization.
4. Posts involving the following will not be tolerated and will subject the individual to discipline:
    - Proprietary and confidential company and/or patient information;
    - Discriminatory statements or sexual innuendos regarding co-workers, management, patients, referring physicians or vendors; and
    - Defamatory statements regarding the company, its employees, patients, referring physicians, competitors, or vendors.
5. Employees are expected to conduct themselves professionally both on and off duty. Where a staff member publicly associates with the company, all materials associated with their page may reflect on the company. Please be advised that inappropriate comments, photographs, links, etc. must be avoided.
6. Employees are prohibited from using True North Imaging or its affiliated companies protected materials (copyright material, branding and/or logo(s)) without prior express written permission.
7. True North Imaging employees are prohibited from speaking on behalf of the organization, releasing confidential information, releasing news, or communicating as a representative of the organization without prior authorization to act as a designated True North Imaging representative.
8. True North Imaging strictly prohibits the use of company owned computer resources for use in the illegal download or upload of copyright materials without express written permission, and authorization from the copyright holder.

This policy is not intended to interfere with the private lives of our employees or impinge their right to freedom of speech. This policy is designed to ensure that True North Imaging and its affiliate organizations image and branding are maintained and remain impugned.

Acknowledgement & Agreement

I, _____, acknowledge that I have read and understand the Social Media Personal Use Policy of True North Imaging. Further, I agree to adhere to this policy. I understand that if I violate the rules/procedures outlined in this policy, I may face corrective action, up to and including termination of employment.

Name: _____ Date: _____

Signature: _____ Witness: _____

Appendix O

Company Issued Property Policy

INTENT

The intent of the Company Issued Property Policy is to outline acceptable use of company issued cell phones, credit cards, laptops and/or any other device.

SCOPE

The Company Issued Property Policy shall apply to True North Imaging, its employees and management team at all times and without exception.

DEFINITIONS

Device is defined as a thing made or adapted for a particular purpose, especially a piece of mechanical or electronic equipment (Oxford Universities Press, 2011).

General Guidelines

Any company issued device and/or service package used to conduct True North Imaging business remains the property of True North Imaging, and must be used responsibly, ethically, efficiently, and as intended. True North Imaging employees must take all necessary precautions to safeguard such devices issued to them against damage, loss or theft.

The following terms and conditions must be adhered to by all True North Imaging employees at all times:

- Company issued devices remain the property of True North Imaging at all times.
- Company issued devices, equipment and related accessories, including air time, are to be used for business purposes only.
- Company issued devices are strictly prohibited from being used to conduct illegal transactions, harassment, violence or any other unacceptable behavior or act.
- Employees are strictly forbidden from making or receiving business calls on a cell phone while operating a motor vehicle.
    - Exceptions may be made in the case of extreme emergencies, such as an accident, vehicle failure, or other imminent danger.
    - Drivers are required to safely pull over and place the vehicle in park before making, or receiving, cellular phone calls or otherwise using a device.

- If a company issued device is damaged, lost, or stolen, such incidents must be immediately reported to the employee's immediate Supervisor.
    - Any damaged, lost or stolen device will be repaired or replaced as deemed appropriate by True North Imaging.

- Prior to termination of employment or job duties requiring company issued property, each device user must:
    - Ensure that service accounts are reconciled prior to departing the employ of True North Imaging.
    - Surrender any company issued property to their immediate Supervisor.

- Legal action will be taken against any former employee for service accounts in arrears or devices which were not returned before their departure, after the termination of his/her job duties.

Acknowledgement & Agreement

I, _____, acknowledge that I have read and understand the Company Issued Property Policy of True North Imaging. Further, I agree to adhere to this Policy and will ensure that employees working under my direction adhere to these guiding principles. I understand that if I violate the terms, conditions, rules or procedures outlined in this Policy, I may face corrective action, up to and including termination of employment.

Name: _____ Date: _____

Signature: _____ Witness: _____

Professional Conduct Policy and Procedures

The Management of True North Imaging is committed to providing patients and visitors with a safe and professional environment from which high quality diagnostic examinations and services are delivered. Patients and visitors have the right to be treated with dignity and respect and be kept safe from all unnecessary risk of harm, pain, or distress by all members of the True North Imaging team. Employees are required to immediately report to Management any signs of mistreatment, abuse (physical, sexual, or mental) by any True North Imaging employee towards a patient or visitor. Any staff member who is being investigated will be removed from unsupervised, direct patient contact and/or may be suspended without pay pending completion of an investigation. Mistreatment or abuse (physical, sexual, or mental) toward a patient or visitor may result in disciplinary action up to and including termination of employment.

It is the policy of True North Imaging that a zero-tolerance attitude be followed concerning mistreatment and abuse (sexual, mental, or physical) of patients or visitors.

Zero Tolerance: means that no act of mistreatment or abuse is ever acceptable, nor will it be tolerated by True North Imaging.

- Mistreatment and abuse are not acceptable due to the physical and mental harm it causes
- Mistreatment and abuse are not acceptable as it destroys the patient-healthcare provider trust.
- Mistreatment and abuse are not acceptable as it is an abuse of one's position in a healthcare setting.
- Mistreatment and abuse are not acceptable as it destroys the public trust and tarnishes True North Imaging's ability to provide services.

Patient & Visitor Rights:

Patients and visitors have the right:

- To be free from risk of harm;
- To be free from actual harm; and
- To be treated with dignity and respect.

Screening Process for New Employees

True North Imaging will perform a CPIC Criminal Record Check on all new employees and contractors using the following process:

- Candidates, prior to their first day of employment, will complete a "Service Order Consent Form" and provide two pieces of identification.
- The consent form and photocopies of the ID will be sent to "Hire Performance" for the purposes of performing a criminal record check.
- All offers of employment will be conditional upon satisfactory completion of a criminal record check.

Performing Medical Procedures

Technologists, Radiologists, and physicians must have patient care as their main concern. In relationships with patients and visitors, clear and professional boundaries must be maintained. All patients and visitors must be treated with dignity and respect.

Technologists, Radiologists, and physicians must have the knowledge, skill, and judgment to avoid placing patients at unnecessary risk of harm, pain, or distress. They must be able to provide appropriate responses to patient inquiries about procedures and related issues, and accept the patient's autonomy and the right of the patient or the patient's substitute decision maker to consent to or refuse service.

Technologists, Radiologists and Physicians must:

- Provide clear and understandable information to the patient or patient's substitute decision maker prior to, during and following the diagnostic procedure/exam
- Give the patient or substitute decision maker an opportunity to ask questions
- Provide answers to questions as appropriate and within one's scope of responsibility

- Refer questions that are outside one's scope of responsibility to an appropriate health professional for answers
- Carry out diagnostic or therapeutic procedures/exams only with the consent (informed or implied) of the patient or substitute decision maker
- Treat the patient with dignity and respect and in accordance with the Code of Ethics of their professional association/college
- Make modifications to procedures based on the patient's physical, medical and/or emotional status and needs
- Instruct the patient to remove only the clothing and items that will interfere with the diagnostic or therapeutic procedures being performed
- Provide the patient with a gown or sheet to cover areas where clothing was removed
- Explain to the patient when or where they may be touched and why
- Touch the patient in only those areas needed to facilitate carrying out the procedure/exam
- MRTs (medical radiation technologists) must comply with the Regulated Health Professionals Act pertaining to the prevention of sexual abuse and the College of Radiation Technologists of Ontario sexual abuse prevention program.

Always:

- Act in the best interest of the patient at all times without discrimination against age, ability, gender and gender identity, race, ethnicity, language, culture, beliefs, politics and political climate, history, colonial legacies, migration status, employment status, income and social status, literacy level, health status, and geography. The policy should outline the organization's commitment and approaches to reducing stigma and discrimination, and a mechanism to address stigma and discrimination if it occurs.
- Inform the patient what you will be doing prior to doing it and obtain the patient's consent verbally or otherwise.
- Never exploit the healthcare provider/patient relationship for any purpose;
- Listen carefully to the patient and provide support whenever you can;
- Document the particulars of any situation where it may be perceived or considered that you have not met the policy of zero-tolerance; and
- Immediately inform your supervisor, manager and/or employer of any incident that could be interpreted as abuse (sexual, mental, or physical) or mistreatment.

Gowning Procedures:

Examinations/procedures must be conducted in a way that protects a patient's dignity and right to privacy.

Prior to the examination/procedure staff must;

- Read the request for consultation/requisition and determine if any clothing or jewelry needs to be removed
- Assess the patient's condition and determine whether he/she can accomplish this task without assistance

Where a patient is required to remove any or all of their clothing, a technologist or staff member must:

- Confirm with the patient the exam/procedure being performed and specifically the body part being examined
- Explain to the patient what clothing needs to be removed and why
- Provide the patient with a gown and instructions on how to wear the gown. When necessary, provide the patient with an additional gown to ensure a patient is completely covered
- Patients must be provided with a private place to undress
- If the patient is elderly or incapacitated in any way, ask the patient if he/she requires help dressing or undressing. If the patient needs assistance, allow them to choose their preferred method of assistance
- If a staff member is required to assist a patient dressing or undressing, touch the patient only where it is necessary to remove clothing. Keep the patient covered as much as possible during the process to maintain the patient's dignity and right to privacy.
- Young children should be undressed by a parent or guardian whenever possible
- Care should be taken before, during and after the examination/procedure to ensure the patient is properly covered
- When deemed necessary, a witness/chaperone may be required or requested by either the staff member or patient

Reporting & Investigation Procedure:

The Management of True North Imaging supports a zero-tolerance policy. All complaints will be immediately investigated upon notification. Staff members who are being investigated will be removed from unsupervised, direct patient and visitor contact until the completion of an investigation. In some cases, a staff member may be suspended without pay pending the completion of an investigation. In all cases, it will be the Management's priority to ensure the safety of all patients and visitors.

Complaints may be received either by letter, e-mail, telephone or in person. Complaints may be received by the patients, family member, visitor, staff member or public.

Procedure for Handling a Complaint:

- All patient or visitor complaints relating to mistreatment or abuse MUST be immediately forwarded to the Regional Supervisor and Management for investigation.
- The staff member who is first to receive a complaint must:
    - Listen without interruption
    - Show empathy, concern, and a willingness to help – Ask: How can I help?
    - Capture essential information (location, day, time, details of event, etc.)
    - Ensure all contact information is obtained for the person making the complaint.
    - Inform the person that their complaint will be investigated and that they will be contacted by Management within 24 hours.

- The Regional Supervisor and Management will conduct the investigation by;
    - Informing the involved staff member of the complaint made
    - Make arrangements to remove that staff member from unsupervised direct patient contact
    - Contact the complainant and inform them of the investigation process. Obtain any further information from the complainant about the incident(s)
    - Direct the staff member, who is the subject of the complaint, to document, in writing, their recollection of the alleged incident(s)
    - The Regional Supervisor and Management may obtain information relating to the complaint from a variety of sources including; existing policy and procedures, speaking with the parties identified, reviewing current processes, review of the patient's health record, etc.
    - Management will analyze the data or findings of an investigation and determine an action plan to improve the process/system. Action plans may include providing education to staff, change to policy, ensuring compliance with policy, contacting the relevant College or association, disciplinary action for involved staff member(s), etc.
    - All results will be documented in writing and shared with the complainant and involved staff member. Investigation results will be placed in the employee's human resource file.

Patient Data and Examination Confirmation

Patient name, Date of Birth (DOB), exam orders and referring physician confirmation are critical to ensure the right patient is receiving the right diagnostic test. Patient Data confirmation will take place **three times** during the process of a patient's interaction with a True North Imaging clinic.

1. All patient data and exam confirmation are confirmed at the **time of booking** and entered into the scheduling module of MediExpress. This is done either in person with the patient or over the phone.

2. All patient data and exam confirmation are confirmed when the patient presents at the clinic to **register** for their exam. All health cards are verified at the time of registration.
   The patient demographics are then sent to the modality specific worklists.

3. The third point of patient data and exam confirmation happens as the technologist takes the patient into the exam room. Each **technologist verifies the patient data and exam confirmation**, verbally and will place a check mark on the patient bag label and requisition to document confirmation prior to starting the examination. Technologists are required to record their name/initials on the observation worksheet.

OFFICE PROCEDURES

Revised July 2024
Revised October 2023
Revised March 2022
Revised April 2021
Revised March 2020
Revised October 2019
Revised September 2019
Revised March 2019
Revised October 2017
Revised November 2012
Reviewed October 2011
Reviewed December 2009
Revised June 2008
Reviewed January 2007
Reviewed December 2003
Revised February 13, 2002
Revised January 04, 1999
Revised December 1998
Created October 1997

OFFICE PROCEDURES

DOCUMENTATION of PATIENTS & IMAGES

Requesting Copies of Exams:

When patients are requesting a copy of their examination for either personal purposes or for a physician involved in their care (circle-of-care), An Image Release Form (Appendix A) must be completed and scanned into PACS under relevant case number. A copy of the final report is to be included only if requested by the physician or patient.

Patients may also request access to their images through third party agent Pocket Health. An on-line release form is required and more information can be found at www.mypockethealth.com/True North Imaging

It is the law that a patient's medical record, including ultrasound images, x-ray images and medical reports, belong to the patient. Therefore, in order for us (True North Imaging) to release any part of the patient's medical record to a Third Party or Medical Third Party, we (True North Imaging) require the patient's consent. When Images (CDs) and/or reports are picked up, I.D. is required.

- If a patient requests a copy of their exam in person, Image Release Form (see Appendix A) and I.D. is required.
- If a parent/legal guardian requests a copy of their exam in person, Image Release Form must be completed and signed. I.D of the parent/legal guardian is required.
- If a person comes into the facility with a written note signed by the patient/legal guardian, which includes the patient's name, name of person picking up films, type of examination, and destination, an Image Release Form must be completed and signed. The written note must be scanned into PACS along with Release form and photocopy of ID. The Third Party must provide I.D.
- If the original referring physician telephones to authorize release of a patient's images and/or report to a Medical Third Party, the phone call must be documented on the Authorization Form(see Appendix B) including details of the patient's name, birth date, date and time of call, and identity of the True North Imaging staff member who took the call. Authorization form must be scanned into the patient's chart.
- If the patient/legal guardian calls to request their films be forwarded to a Medical Third Party (i.e. Hospital, Physician, or another I.H.F.), they must be instructed to have the Medical Third Party contact us.
- When the films are requested by a (the) Medical Third Party, a completed Patient Consent To Disclose Personal Information Form (see Appendix D) must be faxed to us BEFORE releasing the films. If the Medical Third Party does not have one, ours can be faxed to them for completion.

NOTE: The Medical Third Party will have to change the facility name.

Appendix P

IMAGE RELEASE FORM

TO: TRUE NORTH IMAGING

RE: _____ D.O.B.: _____
[Insert patient name]

I am the patient, or I represent that I have the following relationship to the Patient/Legal Guardian

_____ [myself, mother/father, daughter/son, etc.] and that the Patient/Legal Guardian has specifically requested that his/her films be released to me.

DATED at _____ this _____ day of _____, 20_____.

NAME: _____ SIGNATURE: _____
[print]

Appendix Q

PATIENT CONSENT TO DISCLOSE PERSONAL INFORMATION FORM

I _____, hereby authorize TRUE NORTH IMAGING to release the

following personal information to _____.
(Name of hospital/physician's office)

I request:

_____ Digital copies of original examination(s)

_____ Final report(s)

For the following modalities:

_____ Ultrasound _____ X-Ray _____ Mammography _____ Bone Density

For the specified time period, between _____ and _____.

Patient's Name: _____

Mailing address of Patient _____

_____

Health Card #: _____

Mailing Address of Physician/Hospital _____

_____

Date: _____ Signed by: _____
(Patient or substitute Decision- Maker)

Witness: _____ _____
(Relationship to the Patient)

Appendix R

AUTHORIZATION FORM

TO: TRUE NORTH IMAGING

RE: _____ D.O.B.: _____
[Insert patient name]

Case # or Type of Exam: _____

A verbal request has been received for the release of the images and or report relating to the above-reference study.

The subject images and/or report are being taken/mailed/faxed to:

FACILITY/PHYSICIAN: _____.

DATED at _____ this _____ day of _____, 20_____.
[time] [month]

STAFF SIGNATURE: _____

PHYSICIAN REFERRALS & REQUISITION PROTOCOL

NO PATIENT IS TO BE EXAMINED WITHOUT A REQUISITION:
Every examination that is to be done must have a signed requisition to accompany it.

Booking Appointments:
Appointments are booked into the RIS System (MediExpress) over the phone or in person by patients or referring doctors' offices.

Telephone referrals:
Telephone referrals are booked in RIS System (MediExpress). If a referring physician or their office calls to refer a patient for an exam but is unable to send a signed requisition immediately, you must document the name of the person you were speaking with, what exam is being ordered and any clinical history provided. At that point you can write a requisition on the physician's behalf and continue with the examination, however you must obtain a signed requisition at some point. Once received, ensure it is scanned into the patient's file.

If a patient is calling to book an appointment over the phone, ask the patient if they have been given a requisition and if they have been referred by their physician. If so, then ask them to bring the requisition to their appointment. If they have not been given a requisition, please ask them to call their doctor and have it faxed over.

Telephone manners in dealing with these calls play a very important role and must positively reflect our professionalism, efficiency, and willingness to cooperate. The following fields will need to be completed in the RIS system: Patient's name, DOB, HIN, referring physician's name, the nature of the examination and the telephone number where the patient can be reached.

The referring physician's office or patient should be asked, "Does this patient have any special requirements that we should be aware of?" "Has the patient been reminded of the required preparation?" Confirm the day, time, exam, and instructions for the examination.

Booking Appointments for Non-Medical Reasons:
There **must always be a medical reason** for any ultrasound to be performed. i.e.: obstetrical ultrasound for fetal gender only (entertainment purposes) is **never** to be performed. Patients should be made aware that we are a diagnostic imaging center and we are not permitted to perform such studies.

Mammography Appointments:
Obtaining previous studies is paramount in the diagnosis of mammography. At True North Imaging we make every reasonable attempt to obtain previous mammogram films for comparison.

When booking a mammography appointment, ask if the patient has ever had any previous mammograms taken, OR IF SHE HAS IMPLANTS. If a previous outside mammogram has been performed, ask the patient to bring these images to their appointment, explaining that comparison views offer valuable diagnostic information. If previous images are available on HDRIS or previous mammogram images were part of the Ontario Breast Screening Program (OBSP) patient is not required to obtain their images. OBSP chart requests including images will be requested through the program.

If it is not possible for the patient to retrieve the films/CD, obtain the correct spelling of the patient's name – at the time of the previous examination, date of birth and clinic name with the telephone number where the previous images were taken.

If the patient cannot remember, call the referring physician for details. Obtain verbal authorization from the patient to release the films to True North Imaging and sign the Undertaking Form on behalf of the patient. Keep this consent form for their appointment date. Telephone the other facility and arrange for the films to be sent to your office; fax or mail the release form to them. When the patient arrives for their appointment, have the patient sign and date the Undertaking Form. To be scanned into PACS/RIS.
If the images are not received before the examination, write a note under case number in RIS that previous studies have been requested but are not yet available. An attempt should be made to obtain a copy of the previous report prior to examining the patient. It is the receptionist' responsibility to ensure that every attempt has been made to obtain the previous images, however, after 10 business days images are to be reported. When the Images are received, case should be redirected to reporting radiologist for an addendum report to be issued including comparison of studies.

FINAL REPORTS
All final reports will contain the date of dictation, date of exam, transcribers initials, Radiologists name and the initials of the person printing the report. Turn-around time for final reports is 24-48 hours.

VERBAL REPORTS
THE PROVISION OF A MEDICAL DIAGNOSIS IS THE SOLE RESPONSIBILITY OF THE REPORTING RADIOLOGIST. If a verbal report is requested, the study will be marked as priority in our RIS and will be viewed on the Radiologist worklist as such. The Radiologist will review the exam and then call the referring physician with their impressions and then document this on the final report.

True North Imaging does not condone or promote the practice of "technologist verbals". If the referring physician himself/herself requests such a report, case should be "STAT" in RIS system and receptionist to contact head office to ensure expedition of final report. Reporting radiologists are available for verbal reports at Toronto Head Office and or Kitchener-Waterloo Head Office.

STAT Requests:
If a physician has checked STAT on the requisition, the case must be marked as STAT in our RIS system prior to completing the case to the radiologist. This will put the case to the top of the radiologists list in red, the radiologist will report this case as quickly as possible. All STAT reports are faxed to the referring physician automatically immediately after the radiologist has reported it.

Urgent Findings:
If a technologist notes an urgent finding upon doing an examination, they are to call the reporting radiologist prior to letting the patient leave the office. The radiologist will review the examination and attempt to contact the referring physician by phone while the patient is still in our office. The radiologist will then advise the technologist on how to proceed with the patient.

If for some reason the radiologist is unable to contact the referring physician, the radiologist will speak directly with the patient on the phone and advise of findings and next steps. The radiologist will document these events in the report being issued to the referring physician

Documentation:

Documentation must be made of the date, time and to whom a verbal is given in all cases.

If a Verbal is Requested Over the Telephone after the Hard Copy has been Sent to the Referring Physician:

In order to verify a legitimate physician request, take a telephone number and ask if you can return their call with the report in a few minutes. Cross-reference this number with your records. If a physician is calling and wishes to hold, give the report right away.

In an effort to maintain confidentiality of patient records the birth date, address, or health card number must be cross-referenced.

INTERESTING CASE FILE/TEACHING FILE

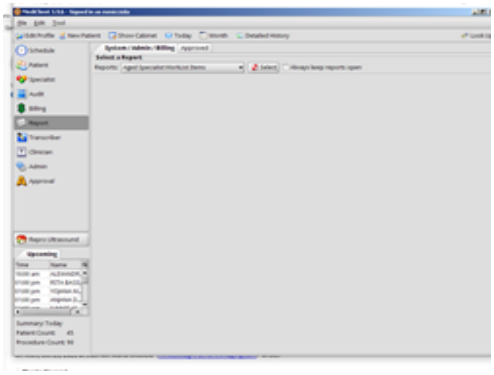
A list of interesting cases, pathology cases and teaching cases are available in the Reports tab in our RIS system. These cases can be selected by date range or by specific location. This file will contain x-ray, ultrasound, and mammography cases. The radiologist will flag these cases in RIS which will be saved in RIS indefinitely.

This file is available for all staff members to review. Supervisors will select cases to review at Staff meetings.

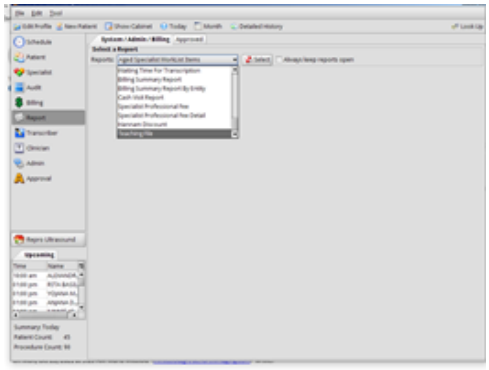
TEACHING FILES/INTERESTING CASES

How to retrieve Teaching Files / Interesting cases from MediExpress:

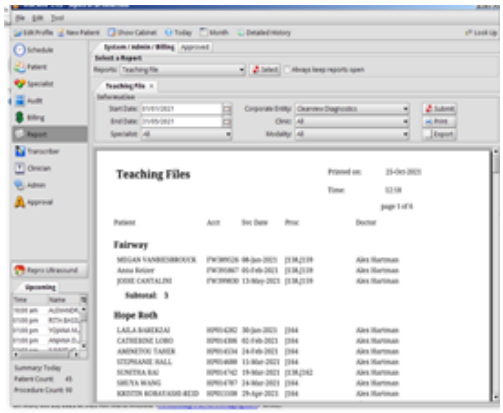
1. Click on the reports tab.



2. Click on the drop down from “Select a Report”
3. Scroll down to “Teaching File”



4. Select date range
5. You can select a specific clinic or company



6. Hit the submit key and the report will generate

The report will show the patient's name, location accession number, service date, procedure and radiologist

FETAL GENDER

Fetal gender is only released by DMS at anatomical scan if the following:

- Once the radiologist has reviewed the case and confirmed the gender.
- If indicated on requisition by referring physician
- If the referring physician has a standing order for disclosure at the clinic

TYPES of APPOINTMENTS, PREPARATIONS & TIME REQUIREMENTS:

The following are types of examinations booked, the necessary preparations and the time required.

Abdominal Ultrasound: (excluding Kidneys)	The patient **MUST NOT** eat or drink anything for 12 hours prior to the appointment time, with the exception of medication. The minimum time booked is 30 minutes.
Abdominal & Pelvic Ultrasound (when both are required):	The patient **MUST** have a full bladder for this examination. Follow the above instructions for abdomen, but one hour before the appointment the patient must have **completed** drinking 32 oz (1Litres) of **WATER ONLY**. The minimum time booked is 45 minutes.
Pelvic or Obstetric U/S:	The patient **MUST** have a full bladder for this examination. The patient must drink 32 oz (1 Litres) of water or juice. This must be finished **one hour** before the appointment time period. The patient may eat normally. The minimum time booked is 15-30 minutes. **Anatomical Scans (18-20 weeks) are booked for 45 minutes.**
Genito-Urinary Tract (GUT) U/S or Kidney U/S:	Follow instructions for a Pelvic Ultrasound. The minimum time booked is 30 minutes.
Transvaginal (TV) Ultrasound:	Empty bladder. The minimum time booked is 15 minutes.
Nuchal Translucency (only):	Full bladder. The minimum time booked is 30 minutes.
Ultrasound of Thyroid, Scrotum or Breast:	There is no preparation for these examinations. The minimum time booked is 15 minutes. Bilateral breast ultrasounds are booked for 30 minutes.
Vascular Ultrasound:	There is no preparation for these studies. The minimum time booked will vary with the specific vascular study and technologist's experience. The booking should be clarified with the technologist who will be performing the examination. In general, allow 30-60 minutes.
Follicular Monitoring:	Day 3 patients must have a full bladder for the first cycle day. All other cycle days have no preparation. The minimum time booked is 10 minutes.
Mammography:	On the day of the examination the patient should **not** use underarm deodorant or powder. The minimum time booked is 15 minutes; implants 30 minutes.
Sonohysterography:	Empty bladder. The minimum time required is variable and should be confirmed with the physician performing the study.
Transrectal (TR) U/S:	Follow preparations for pelvic ultrasound. The minimum time required is 45 minutes. Take a mild laxative the night before the procedure.
Muskulo-Skeletal U/S:	There is no preparation for this study. The minimum time booked for unilateral is 15 minutes and for bilateral is 30 minutes.
Bone Mineral Density:	There is no preparation for this study. The minimum time booked is 20 minutes.

PATIENT RECEPTION

It must be emphasized that the receptionist is the patient's first contact with the office. Hence, a warm, friendly, reassuring approach is necessary to welcome the patient and to allay any fears they may have. **You must always address the patient with respect.**

Obtain the patient's requisition. A complete requisition must include patient's name and 1 other identifying factor (i.e., DOB or HC#), type of examination, and referring physician's signature.

Ask for all information necessary to complete the billing. This includes the correct spelling of the patient's name, their address, date of birth, and their health card number. The health card must be shown by the patient so that it may be verified for validity and checked for a version code.

Ascertain whether the pre-examination preparations have been followed for patients with ultrasound or special procedures appointments. If not, consult the technologist. After obtaining all the information, and registration of the patient in RIS the patient should be turned over to the appropriate technologist.

When an examination has been completed, answer the patient's queries to the best of your ability. Be reassuring, confident, and ALWAYS address the patient by name.

When a Patient Arrives for the Examination Without a Requisition:
The receptionist will have to phone the referring physician to obtain a copy of the patients' requisition, in order for authorization to perform the examination. If referring physician's office is unable to fax a copy of requisition staff are required to fill out a requisition form on behalf of the referring physician including all pertaining information (test order, clinical information, date, and time) and request a fax copy of requisition to be faxed over when possible. The requisition should indicate, "telephone referral".

If the referring physician's office cannot be reached, refer to sections USPRO4 or RP1 or MP1 or BD1.

If there is any doubt or concern as to the reason for this examination:
If there is any doubt as to the reason for this examination or concern regarding the requisition, the technologist must discuss the concern directly with the referring physician or health care professional who ordered the exam. Document the concern and steps taken to resolve the situation, who you spoke to and final resolution on the requisition.

When a Patient Arrives for an Examination Without their Health Card:
Remind the patient that it is their responsibility to carry their health card at all times. Every effort must be made to obtain the health card number while the patient is on site. The referring physician's office will release the number if you call for it. If the referring physician's office is closed, ask the patient if there is anyone that they could call who would have, or have access to their number. Failing this, have the patient fill out a Health Card Release Form. Explain to the patient that because they do not have their card, when they sign this form, the Ministry of Health will release their Health Card number to us. The Release Form is forwarded to head office for processing. **NEVER refuse service to a patient because they do not have their health**

card with them. If you ascertain that the health card presented is fraudulent, you have the authority to confiscate the card. You may ask the patient to pay cash for the services performed.
When a Patient Arrives for an Examination and they have lost their Health Card or it has expired:
Have the patient fill out the Health Card Release form and give them the address of the nearest Ministry of Health branch so that they may obtain a new card.

When a Patient Arrives for their Appointment on the Wrong Day:
Explain to the patient that there are other patients booked, however, if they would like to wait, they will be accommodated when possible. Be honest with the patient in your estimation of the time they may have to wait to be seen.

When a Patient Arrives for an Examination and has Out-of-Province Health Insurance:
The patient must produce a valid Health Insurance Card from their home province.

If the card cannot be presented or if the card is expired, the patient is responsible for payment directly. Inform the patient of the total cost; payments can be made by credit card, debit, or cash. In order for the patient to be reimbursed, the patient should submit the receipt to their provincial health ministry.

NOTE: The Provinces of Quebec and The Northwest Territories do not pay for examinations performed in private clinics outside Quebec and The N.W.T. Residents of Quebec and The N.W.T. must pay at time of procedure.

To register out-of-province patients in RIS - go to Billing tab, and change billing type from OHIP to RMB; in the pop-up box enter the province code and the out-of-province Health Card Number.

When a Patient Arrives for an Examination and has Out-of-Country Health Insurance:
All out-of-country patients must pay for their examinations at the time of service, either in cash, credit cards or debit. Use the current out-of-country fee schedule provided by the Head Office to determine the fee.

Follow the above instructions for registration except in the billing tab click on “Cash”.

EXAM ROOMS
All exam rooms are clearly labeled with signs indicating: **“Do Not Enter, Exam In Progress”**

TRACKING PATIENT THROUGH FACILITY
Staff will be able to track patients as they move through the facility. The tech will open the pts’ chart on their computer. They will click on the operator and select their name, then right click to change the status to IN ROOM, question “Has patient been called?” click “yes” in doing so, the colour in the scheduler will change to BLUE and this will allow everyone to know where the patient is at a glance.

Once the patient has finished and they are no longer in that exam room, the tech will right click in the chart again and change the status to OUT ROOM, question “Has patient been discharged?” they will click on “yes” in doing so, the colour in the scheduler will return to YELLOW.

Patient and Physician Satisfaction Surveys

Patient and Physician satisfaction surveys are available online at www.truenorthimaging.com. All locations have been provided with client customer service cards (business cards) that staff may hand out to patients. These cards will provide patients with an opportunity to give online feedback regarding the service received.

Appendix S

PATIENT SATISFACTION SURVEY

CLINIC NAME

True North Imaging takes great pride in the service provided to our patients and their referring physicians. Our expert clinical staff is committed to providing the best possible patient care. We appreciate your time and value your feedback. Your comments will help us with our continuous improvement efforts.

On a scale of 1-5 (5 being excellent), please rate each of the following questions by circling the number that you think best represents the service level that you obtained today:

	(poor) (excellent)
1. I was immediately greeted by a True North Imaging staff member	1 2 3 4 5
2. Considering the number of patients in the waiting room, I waited an acceptable amount of time	1 2 3 4 5
3. The technologist explained the test I was going to have in a manner that I could easily understand	1 2 3 4 5
4. The appearance of the clinic was appropriate for a healthcare setting	1 2 3 4 5
5. Staff were professional in appearance and behavior	1 2 3 4 5
6. I felt that my privacy was being respected throughout my visit	1 2 3 4 5
7. I felt confident in the service I received	1 2 3 4 5
8. Based on today's visit, how likely is it that you would recommend our service to someone else?	(not likely) (likely)
	1 2 3 4 5

If you would like to provide any additional comments or information regarding how we could improve our service or if you would like to acknowledge the exceptional service provided by one of our staff members, please use the space provided below:

_____

_____

_____

Your comments will remain anonymous, however, should you wish to share your experience with one of our Senior Managers, please provide your name and contact information.

I would like to be contacted by a Senior Manager YES NO

Name: _____ Contact #: _____

Appendix T

PHYSICIAN SATISFACTION SURVEY

CLINIC: _____

To assist us in monitoring the qualities of our service, please take a few minutes to complete this questionnaire and return it to the Clinic.

1. Is TNI your preferred choice for imaging? Yes _____ No _____

   If no, please tell us why:

   - Clinic does not offer the modalities I need _____
   - Location of the clinic is not convenient for my patients _____
   - Hours of operation are not suitable for me or my patients _____
   - Quality of reports do not suit my needs _____
   - OTHER (Please Specify): _____

2. Are you currently set-up to use the True North Imaging Portal? Yes _____ No _____

   If no, would you like to be contacted to take advantage of this feature? Yes_____ No_____

   (The web portal provides you with the ability to view your patient's results and images.)

Please rate the following on a scale of 1 (Does Not Meet Expectations) to 5 (Exceeds Expectations):

1. Appointment wait times are within reasonable limits _____
2. Urgent and STAT cases can be accommodated as needed _____
3. I receive routine reports back within an acceptable amount of time _____
4. Reports are concise and comprehensive. _____
5. When necessary, I am able to consult with Radiologists _____
6. STAT, urgent and verbal report requests are provided in a timely manner _____
7. I am informed of any unsuspected or critical findings in an appropriate way _____
8. The requisition form is clear and easy to use _____

Comments:

_____

_____

Name: _____ Telephone: _____

Email: _____

UNINSURED SERVICES POLICY:

A list of uninsured services and their prices must be posted on our True North Imaging website, as well as a visible area at the reception desk in each clinic. This notification must include the list of all uninsured services being offered by True North Imaging, the prices for each uninsured service, the process for obtaining patient consent in connection with the uninsured services (see consent form on next page) and a phone number and email address for the Ministry of Health's Protecting Access to Public Healthcare Program.

Ministry of Health's Protecting Access to Public Healthcare Program
Email: protectingpublichealthcare@ontario.ca
Phone: 1-888-662-6613

When a patient comes in to have an uninsured procedure, they must be made aware that it is not covered by OHIP and what the cost is. They will also have to fill in the "Uninsured Procedure Consent Form" (see consent form on next page) which will subsequently be scanned into their file.

Presently, the list of uninsured services offered at True North Imaging consists of the following:

Sinus X-Rays: X008 - $45.00
Chest X-Rays for Immigration Purposes: X090 - $40.00
Consultation Reports for Chiropractic Exams: A335 - $15.00
High Risk Bone Densitometry (within 1 year of last exam): X155 - $170.00

Appendix U

UNINSURED PROCEDURE CONSENT FORM

I, _____ am aware that the procedure
(Patient Name)

_____ is uninsured by OHIP and that I
(Procedure Name)

give True North Imaging consent to proceed with the procedure. I am also aware that I am responsible for the associated fee of $_____.

_____ _____
(Patient Signature) (Date)

_____ _____
(Witness Signature) (Date)

BILLING

All physicians are responsible to make sure that the proper OHIP codes are correct when reporting their cases. It is expected that regional supervisors and billing supervisors do routine checks to make sure codes are billed correctly.

Should a staff member have any questions regarding billing or proper use of OHIP codes, they are implored to call their supervisor or billing supervisor.

Direct Billing (uninsured patients):

For direct billing for uninsured patients (not in an infertility program), determine the fee from the fee schedule provided by head office and collect the fee from the patient. Enter all required fields except for HIN, proceed to the billing tab and click on "Cash"

Print 2 invoices:

1. One for head office
2. One for the patient's receipt. Mark **PAID**.

Put the money, debit receipt or the credit card slip along with a copy of the receipt in an envelope marked head office. Send it to the Head Office.

Refugee Status Claim Documentation:

The Interim Federal Health Program provides health care coverage for refugee claimants who lack financial resources.

In order to bill refugee status claims, the IFH program requires the following documentation:

1. Determination of Eligibility form
2. An invoice stating the date, the examination, and the patient's information.
3. A completed requisition stating the medical problem (if not for immigration).

If any of the above is not available, the patient **must** pay cash.

Once all of the necessary documents have been received, the billing procedure is as follows:

1. Enter all of the patient information in – Patient Registration.
   - In the billing tab click on the "Third Party" box.
   - Type "Interim Federal Health" this is the Guarantor
   - OHIP fees are billed, and the system does this automatically.
   - Print one invoice for the Head Office.

2. Send a photocopy of the eligibility form, and an invoice with the IFH program standard claim form to the head office. Copies of all documents are to be scanned into PACS under case number.

International Visitors' Health Care Plan Claim
Sun Life Assurance Company or U.H.I.P. (University Health Insurance Plan):
The I.V.H.P. provides health care coverage for university students who lack financial resources.

In order to bill, the patient **must** bring in their own form. Sections #1, 2, and 3 **must** be complete.

Once all of the necessary documents have been received the billing procedure is as follows:

1. Enter all of the patient information in – Patient Registration:
   - In the billing tab click on "Third Party".
   - Type "Sunlife Assurance Company" as the Guarantor.
   - OHIP fees are billed, and the system does this automatically.
2. Print an invoice for head office.
3. Send a photocopy of the requisition, a photocopy of the claim form, and an invoice with the I.V.H.P. claim form to head office. These documents must also be scanned into the PACS system under the relevant case number.

Chiropractor:
A contract MUST be in place prior to the examination if the chiropractor does not have an OHIP billing number and is requesting a report issued by a radiologist. If the chiropractor is not presently in the computer system, the head office supervisor MUST be contacted for further instructions.

Once all of the necessary documents are in place the billing procedure is as follows:

1. Enter all of the patient information in – Patient Registration:
   - Make sure the patient has a valid Health Card as the "Technical" portion will be billed to OHIP if the chiropractor appropriate OHIP billing number.
   - In the "Billing" tab, click on the "Payee Type" Change "Payee Type" from A to B and save.
   - Please follow the above steps for each additional procedure code used.

If the Chiropractor requests the images are to be read by our Radiologist, the procedure is as follows:

1. Find the patient in the Patient Registration screen.
   - Create a new visit.
   - In step two of the booking page choose "third party"
   - Type Chiropractors name – this is the guarantor
   - Bill A335 – consultation code
   - Override the Professional Fee to $15 and $0 for the Technical Fee.
2. If the Chiropractor is not set up in our system as a guarantor, then the patient will have to pay the consult fee at time of request.
   - Please print an invoice and send it to Head Office.

R.C.M.P. AND ARMED FORCES (Blue Cross):

The Federal Government has appointed Blue Cross as their Guarantor for payment, therefore, the Blue Cross form must be completed and signed by the patient PRIOR to the examination.

Once all of the necessary information has been received, the billing procedure is as follows:

1. Enter all of the patient information in – Patient Registration.
   - In the billing tab click on the "Third Party" box.
   - Type "Blue Cross" this is the Guarantor
   - Use OHIP fees. OHIP Fees are billed and the system does this automatically.
2. Print up 1 invoice for head office Billing Supervisor.
3. Send invoice, Blue Cross form, and photocopy of Federal Government Requisition Form to head office Billing Supervisor daily. These documents must also be scanned into the PACS system under the relevant case number.

MEDAVIE BLUE CROSS

INTERIM FEDERAL HEALTH PROGRAM
MEDICAL/GENERAL SERVICES CLAIM FORM

☐ PRIOR APPROVAL ☐ POST APPROVAL PROTECTED "B" (WHEN COMPLETED)

1. CLIENT INFORMATION

Name _____

Client ID Number | | | | | | | | | | | Date of Birth _____ Day Month Year

2. PROVIDER INFORMATION

Specialty (if applicable) _____

Name of Referring Prescriber (if you are a specialist) _____

Name _____ Provider Number _____

Address _____

City _____ Province _____ Postal Code _____

Telephone Number _____ Fax Number _____

3. CLAIM INFORMATION

Invoice Number (from your own office)	Date of Service (D / M / Y)	Fee Code	Units of Time	ICD 9, ICD 10 Code, or Medical Diagnosis	P *	Amount Claimed

* P - Enter Prescriber Designation (i.e. MD) TOTALS:

The IFHP does not cover the cost of health care services or products that a person may claim (even in part) under a public or private health insurance plan. The IFHP does not coordinate benefits with other insurance plans or programs therefore, co-payments are not possible.

NOTE: Providers are responsible for claiming taxes on taxable services and products.

4. ADDITIONAL INFORMATION FOR PRIOR/POST APPROVAL

Provide clinical details/justification and/or attach supporting documentation.

_____

_____

_____

5. CERTIFICATION

I hereby certify that the above services have been rendered, that the claim was made in accordance with the terms and conditions of the IFHP and that any information relating to these services as well as copies and supporting documentation of this information, may be obtained by Medavie Blue Cross.

Provider's Original Signature/Stamp _____ Date _____

I certify that the information above is accurate and the services described above have been received.

Client's Signature _____ Date _____

The purpose for the collection of personal information by Medavie Blue Cross will be solely for the administration of IFHP services and benefits. Medavie Blue Cross will comply with the requirements of the Personal Information Protection and Electronic Documents Act and the Privacy Act when collecting, using and disclosing personal information. Personal information will not be disclosed to third parties except as authorized by law.

IMPORTANT: This claim form must be completed in full or the claim may be rejected. A copy of this form must be kept on file for audit purposes.

Immigration, Refugees and Citizenship Canada / Immigration, Réfugiés et Citoyenneté Canada

MAIL TO
Interim Federal Health Program
Medavie Blue Cross
644 Main Street PO Box 6000 Moncton NB E1C 0P9
Toll-free Number: 1-888-614-1880

CIC-0010222

Health Care Claim

securian CANADA

STUDENTCARE

All claims must be submitted to Securian Canada at the address below no more than 180 days following the date on which the expenses are incurred.

Claimants must provide a valid Canadian address for reimbursement. Claimant reimbursement cheques will not be issued to a non-Canadian address.

1. Member information

Member identification number	Policy number **017896**	Plan sponsor **College International Health Insurance Plan**
First name	Middle initial	Last name

Date of birth (dd-mm-yyyy)	Gender ☐ Male ☐ Female	Telephone number	Email address

Canadian address (street number and name)		Apartment or suite
City	Province	Postal code

2. Claimant information

Attach ORIGINAL receipts indicating that you have paid the provider in full (photocopied bills/receipts are not acceptable).

Person for whom you are making the claim

Last name	First name	Date of birth (dd-mm-yyyy)	Amount claimed $
Last name	First name	Date of birth (dd-mm-yyyy)	Amount claimed $
Last name	First name	Date of birth (dd-mm-yyyy)	Amount claimed $
			Total claimed $

3. Authorization and signature

This section is to be completed when reimbursement is made directly to the claimant.

Authorization

I authorize the healthcare provider/clinic named above to submit claims on my behalf and my dependents (if applicable) to Securian Canada.

I authorize Securian Canada, its agents and services providers and as applicable the plan administrators to collect, use and exchange information needed for underwriting, administration, adjudicating claims and claims management under this insurance coverage. This information can be shared with any person or organization who has relevant information about me including health professionals, government agencies, provincial health care plan, institutions, investigative agencies insurers, re-insurers and, as applicable, the plan sponsor and plan administrator.

If there is suspicion of fraud and/or abuse related to my claim, I understand and agree that Securian Canada its agents and service providers may exchange information about my claim for the purpose of investigation and prevention of fraud and/or abuse with any relevant organization, including as applicable the plan sponsor and plan administrator, law enforcement bodies, regulatory bodies, government organizations and other insurers.

If there is an overpayment, I authorize the recovery of the full amount of the overpayment from any amount payable to me. If I am submitting claims for my spouse and/or dependents, I confirm that I am authorized by them to disclose personal information about them for the purposes described above to Securian Canada, its agents and services providers and any person or organization who has relevant information about them including health professionals, government agencies, provincial health care plan, institutions, investigative agencies insurers, re-insurers and, as applicable, the plan sponsor and plan administrator.

3. Authorization and signature (continued)

Any reference to Securian Canada or the Plan Sponsor includes their respective agents and service providers.

Important

Check one of the following boxes:

- ☐ Payment is to be made to the member. **(Member signature is required below). Enclose all receipts (proof of payments) with your submission and keep a copy for your records.**
- ☑ Payment is to be made directly to the provider **(physician or nurse practitioner).**
- ☐ Payment is to be made to the facility **(hospital/Med Prof Corp/Clinic).**

Member's signature X		Date (dd-mm-yyyy)
Guardian's last name (required if member is 15 years old or younger)	First name	
Guardian's signature X		Date (dd-mm-yyyy)

4. Provider information

Sections 4 and 5 need to be fully completed in the absence of an invoice with the same information.

Provider's name	Physician's name	
Address of provider (street number and name)		Apartment or suite
City	Province	Postal code
Provider ID number (if known)	Telephone number	

5. Statement of services (This section needs to be fully completed in the absence of an invoice with the same information.)

Service date (dd-mm-yyyy)	Description of service	OHIP procedure code (plus) time units, if applicable)	Charge	Diagnosis or reason for visit

I declare that the above is a correct statement of the services rendered.

Provider's signature (a signature is required only in the absence of an invoice) X	Date (dd-mm-yyyy)

6. Respecting your privacy

Respecting your privacy is a priority for Securian Canada. We collect information from application forms and other information you provide to us or our distribution partners in connection with insurance and/or financial products offered by us, as well as (with your consent) through independent medical or vocational assessments, if applicable, and from physicians, medical practitioners, hospitals, clinics or other medical or medically related facilities, insurance companies, MIB, LLC. ("MIB"), and other agents, governments agencies or other organizations, institutions, or persons that have health records, if applicable. We collect, use and disclose your personal information for purposes that include: confirming your identity, underwriting, including determining your eligibility or need for insurance and/or financial products you request; administration and servicing; claims adjudication; protecting against fraud, errors or misrepresentations; and meeting legal, regulatory or contractual requirements. We, and our affiliates, may use the personal information for the purpose of offering you, or allowing select organizations to offer you, other products and services. You may withdraw your consent for this purpose at any time by phone at: 1-888-968-4155 or by mail at: Privacy Office, 25 Sheppard Avenue West, Suite 1400 Toronto, ON M2N 6S6. We will give access to your personal information only to those of our employees and independent contractors, affiliates within our corporate group, administrators, distribution partners, and other third-party service providers and outsourcers, along with our reinsurers, who need your personal information to do their jobs. We will also provide access to anyone else you authorize. All of our service providers with whom we have a contractual

6. Respecting your privacy

relationship are required to protect your personal information in accordance with this privacy statement and our privacy practices. Sometimes, unless we are otherwise prohibited, these people may be in, or your personal information may be stored on servers located in, other provinces in Canada or in countries outside Canada, so your personal information may be subject to the laws of those other provinces or countries. You can ask for the information in our files about you and, if necessary, ask us in writing to correct it. To find out more about our privacy practices, visit http://www.securiancanada.ca/privacy-statement.

Questions? Please visit www.securiancanada.ca or call our toll-free number 1-888-206-9004.

How to submit your completed claim form

Mail your claim form and receipts to:

Securian Canada
Box 963 Stn A,
Toronto, ON, Canada M5W 1G5

Members and providers direct their questions to the toll-free phone number of 1-888-206-9004, Monday - Friday 8:30am - 8pm ET.

Health Care Providers: Email us the claim form and receipts to AAclaims@securiancanada.ca ONLY one member claim per email. Email subject line should include: Policy # 017896 and the Member ID.

Although Securian Canada uses reasonable means to protect the security and confidentiality of the email content it sends and receives, should you choose to send us your claim form by email, the privacy or security of your email cannot be guaranteed.

MEDAVIE BLUE CROSS™ CROIX BLEUE™ MEDAVIE

Canada

General Claim Form - Demande de règlement générale

Protected "B" (when completed)
Protégé « B » (une fois rempli)

☐ Claim Resubmission (please check) - Nouvelle présentation d'une demande (veuillez cocher)

Provider Information - Renseignements sur le fournisseur

Name - Nom _____ Provider No. - N° du fournisseur _____ Type - Genre _____

Address - Adresse _____ GST No. - N° de TPS _____

City - Ville _____ Province _____ PST No. - N° de TVP _____

Postal Code - Code postal _____ Telephone - N° de téléphone _____

Client/Member of (check applicable department) - Client/Membre de (cochez le ministère pertinent.)

☐ VAC - ACC ☐ CAF - FAC ☐ RCMP -GRC ☐ Periodic Health Assessment (RCMP only) Examen de santé périodique (GRC seulement)

Claim Information - Renseignements

Authorization No. N° d'autorisation	Date of Service Date de service D-J M-M Y-A	Date of Rental - Date de location From - De D-J M-M Y-A	To - À D-J M-M Y-A	Benefit Code Code d'avantage	P *	R**	Qty Qté	Total Charge Montant total	Amount Covered by Prov/Terr or private insurance - Montant couvert par la prov./le terr. ou par l'assurance privée	Bill to Health Benefits Program - Facturé au programme d'avantages de soins de santé

* P - Prescriber (ie: MD) - Auteur de la prescription (p.ex., M) ** R - Recommender - Auteur de la recommandation TOTALS - TOTAUX : _____

Client/Member - Client/Membre

Name - Nom _____

Telephone - N° de téléphone _____ Date of Birth - Date de naissance _____ D-J M-M Y-A

Medavie Blue Cross Identification Number - Numéro d'identification Croix Bleue Medavie _____

Address - Adresse _____

City - Ville _____ Province _____ Postal Code - Code postal _____

RCMP Unit / Detachment - Unité / Détachement de la GRC _____ Division _____

Collator - Interclassement _____

Certification - Déclaration

I hereby certify that the above benefits have been rendered and that any information relating to these benefits, as well as copies and supporting documentation of this information, may be obtained by Medavie Blue Cross on behalf of VAC, CAF or RCMP. I agree to return the required health information to the appropriate address. I will keep all records and information relating to any claim in accordance with the laws of my province of business and Canada Revenue Agency requirements for taxation purposes.

J'atteste par la présente que les avantages ci-dessus ont été rendus et que les renseignements relatifs à ces avantages ainsi que les photocopies et la documentation associées à l'information peuvent être obtenus par Croix Bleue, au nom d'ACC, des FAC ou de la GRC. J'accepte de retourner les renseignements sur la santé requis à l'adresse appropriée. Je conserverai tous les dossiers et les renseignements relatifs aux demandes de règlement conformément aux lois de la province où je travaille et aux exigences de l'Agence du Revenu aux fins d'impôt.

_____ _____

Provider's Original Signature/Stamp - Signature originale/tampon du fournisseur Date

Information

Sign up for ePAY (electronic claims submission) at www.medavie.bluecross.ca/healthprofessionals
Inscrivez-vous au service électroPaie (soumission électronique des demandes de règlement) au www.medavie.croixbleue.ca/professionnelsdelasanté

Please submit original copy to Medavie Blue Cross and retain a copy for your records.
Veuillez faire parvenir la copie originale à Croix Bleue Medavie et verser une copie à vos dossiers.
Medavie Blue Cross - Croix Bleue Medavie - 644, rue Main Street, PO Box - C.P. 220 - Moncton NB E1C 8L3

Veterans Affairs Canada Anciens Combattants Canada

National Defence Défense nationale

Royal Canadian Mounted Police Gendarmerie royale du Canada

FAP-001E 03/15

ARCHIVING

True North Imaging complies with Ontario Regulation 215/23 under the Integrated Community Health Services Centres Act for patient record and imaging media record keeping.

Patient Records:

Must be kept and maintained for:

- ten years following the patient's last visit; or
- ten years following the patient's 18th birthday

NOTE: A patient record includes the report as well as the requisition for each procedure.

Imaging Media:

Must be kept and maintained for:

- five years following the patient's last visit; or
- five years following the patient's 18th birthday

THE EXCEPTION IS - *Mammography*:

Must be kept and maintained for:

- Ten years following the patient's **last visit**. This includes both films and patient records.

All patient records and imaging media are stored in PACS as per recommended guidelines.

IDENTIFYING EQUIPMENT USED FOR A PROCEDURE

All images obtained on ultrasound, mammography, BMD or x-ray units are stamped with pt identifiers, date, time and unit the images are being taken. All images are traceable and stamped.

GENERAL HOUSEKEEPING

The office will be cleaned on a daily basis but, in the interests of safety and appearance, every effort must be made to maintain good housekeeping by all True North Imaging staff.

The waiting room area should be kept tidy and daily cleaning protocols and checklists are to be completed and kept in a binder at reception.

Each technologist must complete daily cleaning protocols and checklists and records should be kept in each examination room. Positioning aids, lead aprons, etc. must be stored appropriately between patients.

Staff rooms are to be kept tidy at all times. Where staff rooms are visible to patients, the door is to be kept closed at all times.

PEST MANAGEMENT:

Monitoring and inspecting for pests and conditions that lead to pest problems will be done regularly by the worker representatives of our Health and Safety committee during their monthly inspection of the clinic. Any evidence of a pest problem or conditions that lead to pest problems will be recorded on the inspection report and reported to the immediate supervisor. If necessary, the supervisor will arrange for a licensed pest control company to come to the facility.

PATIENT GOWNS/LAUNDRY:

Patient gowns are supplied by a contracted linen company (Canadian Linen). An ample supply of clean gowns will be dropped off on a weekly or bi-weekly basis, depending on clinic needs. At the same time, dirty, used, soiled gowns will be picked up and taken off site to clean. Laundry bags and stands are placed throughout the clinic, dirty/used gowns are placed in the laundry bags for pick up by the linen company. Should there be any soiled linen (blood, urine, etc) they are to be placed in a plastic bag inside the laundry bag, which will need to be marked on the outside of the bag "contaminated bag inside", before tying up and leaving it for the linen company.

SUPPLIES

Medical Mart supplies will be placed by the regional supervisor. The standard medical mart order form for your location should be completed by the 15th of the month and submitted to your regional supervisor by the 15th of each month. There should be enough supplies for three weeks on site. Technologists are responsible for maintaining medical supplies.

The receptionist will be responsible for maintaining office supplies and printer cartridges. The standard order forms are to be completed and submitted to head office and submitted by the 15th of each month.

PETTY CASH

There will be a petty cash float for small, immediate cash purchases.

All petty cash purchases must be covered by receipts which must be submitted by the 1st and/or 15th of each month for reimbursement. The designated receptionist will be the custodian of the petty cash.

Postage stamps are to be purchased from the petty cash and covered by a post office receipt. Petty cash, with stamps, and receipts for expenditures, should be kept together in a safe place.

TRANSMISSIONS BY FAX

All fax transmissions must be preceded by a cover page. In the case of any patient records or other confidential materials, the cover page must state that the transmission is confidential.

Fax confirmation sheets and the pages that were faxed are to be stapled together and kept in bankers boxes. The box must be labeled with the month/year. All confirmation sheets and faxes are to be kept for 10 years.

Appendix V

True North Imaging
7330 Yonge Street, Unit 120
Thornhill, ON L4J 7Y7
Tel: (905) 707-1777
Fax:(905) 707-0616

True North Imaging

Fax

To:	From:
Fax:	Pages:
Phone:	Date:
Re:	cc:

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

HARASSMENT BY PATIENTS

Should it occur that a patient displays inappropriate behavior while on the premises or during an examination, the requested examination may be refused or terminated. The patient should then be asked to leave.

Immediate notification must be made to the Medical Director, VP Operations and/or Regional Manager. Your area supervisor should be aware of the situation prior to any refusal of examination.

A written report must be completed and submitted to your regional manager, Dr. A. Hartman, and Dr. J. Hartman. The written report must be completed before the end of the shift that the incident occurred.

INCIDENT REPORT - PATIENT/VISITOR

Policy:

All incidents involving patients or visitors must be reported and properly documented.

Definition:

An incident is any unusual or unexpected happening involving patients or visitors. Incidents include, for example, a fall, a contrast error, the loss of property, severe and/or persistent chest pain, hospitalization, etc.

Procedure:

1. Attend to the patient's immediate needs and get further medical assistance if necessary.
2. Notify your head office and one of the following people: Regional Supervisor, VP Operations or Medical Director.
3. An Incident Report Form must be completed on the same day as the incident occurs. All sections must be completed (see OPQA22).
4. The staff member involved in or witnessing the incident must initiate the reporting of the incident and describe in a concise but detailed manner, the incident.
5. If an injury, contrast error or other patient care related incident occurs, a physician must examine the patient and complete the Physician's Report Section of the Incident Report.
6. If you are uncertain as to whether an incident should be reported, discuss it first with the immediate Supervisor.
7. Incidents involving staff members are covered by the policy/procedure "Incident Report" - Staff member.

NOTE: If the RPO is not in attendance, a list of doctors who may be readily available from the building must be maintained. If no physician can be found and the patient is in distress, call 911, give your name and inform the communications operator of the situation.

Appendix W **PATIENT/VISITOR INCIDENT REPORT FORM**

(An incident is any unusual or unexpected happening which involves patients, patient care giver or visitor)

Date and time of incident: _____

Clinic: _____

Location of Incident: _____

1. **PATIENT INFORMATION:**

□ Patient – Case #: _____ □ Visitor □ Other _____

Name: _____ Approximate Age: _____

Address: _____ Telephone #: _____

Pre-incident condition (e.g., Was patient oriented or confused): _____

Any physical disabilities? □ No □ Yes (specify): _____

Patient referred by: _____

Procedure to be performed: _____

2. **INCIDENT:** What happened; what resulted; for example, what part of the body was affected (R or L) cause of the incident if known etc…)

_____

_____

Did anyone else witness the incident? □ No □ Yes

_____

Had any part of the procedure been completed at the time of the incident? □ No □ Yes

State safety device (s) in use: _____

Reaction of patient: _____

3: ACTIONS TAKEN (State immediate corrective/preventative measures taken)

X-Ray ordered? □ No □ Yes

Name of physician notified: _____

Name of person at TRUE NORTH IMAGING Head Office incident reported to or discussed with:

_____

How did the patient leave? □ Unescorted □ Escorted by: _____

□ By Ambulance □ other (specify)

Was the patient examined by a physician? □ No □ Yes

Follow-up recommended? □ No □ Yes (when) _____

4: PHYSICIAN'S REPORT

_____

_____

_____

RESOLUTION OF PATIENT COMPLAINTS POLICY:

At True North Imaging we are committed to ensure that all patient complaints, written or verbal, made to the Company or to a staff member concerning the care of a patient(s) or the operation of the centre are dealt with promptly and thoroughly.

All complaints must be investigated, resolved (where possible) and a response provided to the patient within 10 business days of the receipt of the complaint or investigation. If the complaint alleges harm or risk of harm to a patient(s) it must be dealt with immediately.

Please note: all responses to the patient must include the contact information for the Patient Ombudsman under the Excellent Care for All Act, 2010: (this will allow an outlet for patients who are not satisfied with the resolution provided by TNI)

Patient Ombudsman
Mail: Box 130, 77 Wellesley Street West
Toronto, ON M7A 1N3
Phone: 416-697-0339
Toll Free: 1-888-321-0339
TTY: 416-597-5371
FAX: 416-597-5372

A supervisor, Manager or Director of Operations will complete the "Patient Complaint Record" (see next page) and maintain the record along with any written communication for at least 3 years following the end of the complaint process. This record must be available for inspection if needed.

Each complaint record will be reviewed and analyzed for trends by the Quality Assurance Committee at least quarterly. Documentation of the reviews will be included in our QA meeting minutes, which are distributed to each clinic. Results of these reviews will help us in determining where improvements can be made in our clinics.

The process for receiving and responding to patient complaints must be posted on our True North Imaging website as well as a visible area at the reception desk in each clinic.

What to do if a staff member receives a complaint from a patient:

- document patient name and verify that the contact phone number is correct
- document date/time of complaint
- document nature of complaint
- inform patient that you will relay the complaint to your supervisor who will follow up within 24 hours
- send the above information to your supervisor as soon as possible

Appendix X

TRUE NORTH IMAGING
PATIENT COMPLAINT RECORD

Date Complaint Received: _____

Staff members name complaint reported to: _____

Patient's Name/Case # (if applicable): _____

Nature of complaint: _____

_____

_____

_____

Dates/description of communication with complainant: _____

_____

_____

_____

Actions required to resolve complaint: _____

_____

_____

_____

Final resolution: _____

_____

_____

_____

Follow up actions: _____

_____

_____

Signature: _____ Date: _____

*****Please ensure all written correspondence is attached to this report before filing. All records must be maintained for a period of 3 years from the date of the complaint*****

EQUIPMENT MAINTENANCE SCHEDULE

Modality	Type of Service	Frequency
Ultrasound units	PM's	annually
X-Ray	HARP, PM's	annually
Mammography units	Physicist & HARP	6 months
Mammography units	PM's	annually
BMD units	Acceptance testing & PM's	annually

NOTE: All services are to be scheduled by the lead technologists of the modality at each site. Final reports will be sent to immediate supervisors. Follow-up of any recommendations will be scheduled and followed-up by immediate supervisors**.**

NEW EQUIPMENT PROTOCOL

1. New equipment is purchased based on the quality or age of the existing equipment or for expansion purposes.
2. Manufacturer will contact IT to obtain the Dicom information
3. Once Dicom information is received, the manufacturer will arrange delivery and set-up.
4. Supervisor will notify the location/clinic once the new equipment is to be delivered
5. Once the equipment is set-up and ready for use, training of the new equipment will be given by an applications specialist to existing staff members that will be using the equipment. New staff that start after the initial installation will be trained by personnel that are familiar with the equipment. Training for each staff member must be documented, whether it was training from an application specialist at install or training from another staff member.
6. Management will be responsible for setting up required acceptance testing, HARP testing, Physicist testing, etc. prior to equipment being used on patients and ensuring any required information is forwarded to the Ministry of Health. Dates of testing must be recorded on the "New Equipment Log".
7. The Charge Tech (or a tech being trained on equipment)must fill in all required information on the "New Equipment Log" form (including accessory parts that come with the new equipment (example- ultrasound probes).
8. Once everything has been documented, a copy of the form is to be sent to the immediate supervisor, the original must be kept in your equipment log binder along with service reports, PM reports, HARP reports, etc.
9. Prior to use on patients, the new equipment must be prepared for use:
    a. Put on gloves
    b. Use a SaniCloth (or manufacturer recommended cleaning product) to wipe down the entire unit
    c. Use a SaniCloth (or manufacturer recommended cleaning product) to wipe all accessories (example - probes, cords, mammo paddles, x-ray table, etc)
    d. For ultrasound units, label the endocavity probe as a [High Disinfectant Probe] and also label the endocavity probe with a unique number or letter. This identifier, the

system ID number and date received/put into use must be marked on the reprocessing log. The endocavity probe must be reprocessed as per protocol prior to use.

FAULTY MEDICAL EQUIPMENT/DEVICES

True North Imaging has service contracts with all equipment vendors. (GE, Canon etc.…) Staff experiencing issues with equipment are to contact service directly and to notify their immediate supervisors. If the equipment is non-safe for use, the piece of equipment is not to be used until it is repaired.

Appendix Y

NEW EQUIPMENT LOG

Clinic Location: _____ Room #: _____

Type of Equipment	Manufacturer/ Model Number	Manufacture Date	Installation Date	Serial Number	System ID Number
Example: **Ultrasound**	Canon Aplio	February 12, 2024	April 1, 2024	ABC11111DEF	ON111111US

REQUIRED TESTING:
Date testing performed: _____

Type of Test Performed (HARP, Physicist, Acceptance, etc):_____

Testing reports obtained (Yes/No): _____

Date of Training	Staff Member Trained	Training Conducted By:

Form completed by: _____
****Once completed please send a copy to your supervisor****

DECOMMISSIONED EQUIPMENT

When a piece of equipment is no longer used and taken out of service, the date of this must be recorded. All confidential information must be removed from the equipment and moved to an alternative storage medium. Documentation of what ultimately happened to the equipment must also be recorded (ie-transferred to _____ clinic, sold to _____, destroyed, recycled)

DECOMMISSIONED EQUIPMENT

Room #: _____ Date: _____

TYPE OF EQUIPMENT	MANUFACTURER	SID	DATE NO LONGER IN USE	CONFIDENTIAL INFO REMOVED BY	WHERE DID UNIT GO

Form completed by: _____

****once completed please send copy to head office supervisor****

PRIVACY MANUAL

In accordance with the Personal Information Protection and Electronic Documents Act of Canada, and the Personal Health Information Protection Act of Ontario.

Revised July 2024
Reviewed April 2022
Reviewed December 2020
Revised March 2019
Reviewed December 2018
Revised October 2017
Revised February 2016
Reviewed November 2012
Revised November 2018
Reviewed July 2008
Revised December 2005
Prepared November 2004

PRIVACY MANUAL

PRIVACY POLICY

Our Privacy Commitment

1. True North Imaging collects, uses and discloses your personal information in compliance with the requirements of the Personal Information Protection and Electronic Documents Act (PIPEDA). Your name, contact information, medical history, and billing information (such as insurance and/or OHIP information) as well as any charts, diagnostic/laboratory results and other health information collected or produced while we provide you with health care services will form part of your personal health information file.
2. Personal information is collected and shared for the purpose of providing information to those involved in the provision of your health care, in the administration of our clinic, and obtaining reimbursement from OHIP or third-party payers for our services.
3. Your personal information will not be used for any other reason without your consent.
4. Our staff are required to keep your personal information confidential.
5. We will ensure that your personal information is accurate, complete and up-to-date.
6. Your personal information will only be used for the purposes for which it was collected.
7. Your personal information will be safeguarded from unauthorized access, disclosure, copying, use of modification, using all the necessary tools available to us. These safeguards include, but are not limited to, physical measures such as locked cabinets, technological tools such as firewalls, or organizational controls such as security clearances.

Your Privacy Rights

1. You have the right to withhold our consent, and we will inform you of the consequences.
2. You are entitled to request access to your personal information, know how it will be used and to whom it has been disclosed. We will respond to any request to view your personal information as soon as possible and no later than 30 days after we receive your request.
3. If you have any concerns, with our privacy policy or the way in which your personal information is used, please contact our Privacy Officer, Jason Hartman at (Tel: 905-707-1777; Fax: 905-707-0616: Address: 120-7330 Yonge Street, Thornhill, Ontario L4J 7Y7
4. All complaints and inquiries will be taken very seriously and will be investigated by our Privacy Officer. You may contact the Privacy Commissioner of Canada toll-free at: 1-800-282-1379, if you have any questions or concerns.

PRIVACY PRINCIPLES

ACCOUNTABILITY

Organizations are accountable for the protection of personal health information under their control. The Senior Management of True North Imaging has designated an individual to be accountable for compliance with the Code. Other individuals may be delegated to act on behalf of the designated person or take responsibility for day-to-day collection and processing of information.

Upon request, True North Imaging will make known the title and contact information for the person designated to oversee True North Imaging's compliance with PIPEDA, PHIPA and any other Provincial Privacy Acts and True North Imaging Privacy policies.

True North Imaging is responsible for the personal information in its possession.

True North Imaging has implemented policies and procedures to give effect to the privacy principles, including:

1. Implementing procedures to protect personal information
2. Implement procedures to receive and respond to complaints from patients, employees and other clients
3. Provide staff with knowledge of True North Imaging Privacy policies and procedures

IDENTIFYING PURPOSES

The collection of personal information is to be limited to what is necessary for the identified purposes and will be collected by fair and lawful means.

Collected information is to be used only for the following reasons:

1. To relay results of diagnostic imaging testing or procedures to the requesting healthcare professional
2. To assist in the interpretation of results
3. To use information to bill the appropriate legislative authority or agency for services performed
4. To bill the patient directly when service are not covered by the Provincial or Federal health insurance plan

Personal information is also collected for employment and personnel purposes. When a patient presents at a True North Imaging imaging centre with a physician signed requisition (or other authorized healthcare practitioner), True North Imaging has the implied consent of the patient to collect personal information for the test or procedure being performed. If asked or required, True North Imaging staff will explain the identified purposes for collection or refer the person to the designated person within True North Imaging who shall explain the process.

CONSENT

Information must be collected, used and disclosed with the knowledge and consent of the individual and for a reasonable purpose. Seeking consent may be impossible or inappropriate when the individual is a minor, seriously ill, or mentally incapacitated. True North Imaging may disclose medical information without knowledge or consent in the case of an emergency where the life or health of an individual is threatened.

Personal health information may be used to contact a relative, friend or substitute decision maker of an individual who is incapacitated, injured, ill and unable to consent.

True North Imaging will not, as a condition of the supply of its services, require an individual to consent to the collection, use or disclosure of information beyond that which is required to fulfill the identified purposes of the collection.

An employee or patient may withdraw consent at any time, subject to legal or contractual restrictions and reasonable notice. True North Imaging will inform the individual of the implications of withdrawing consent.

Staff are only allowed to access patient information that is relevant to their work. At no time is it acceptable to look up information for personal reasons. All access to patient data is logged and can be audited. **If you are caught looking up patient information that is not work related you will be immediately terminated.**

LIMITING COLLECTION

The collection of personal information is to be limited to what is necessary for the identified purposes and will be collected by fair and lawful means.

Patients: Collected information is to be used only for the following reasons:

1. To relay results of diagnostic imaging testing or procedures to the requesting healthcare professional
2. To assist in the interpretation of results
3. To use information to bill the appropriate legislative authority or agency for services performed
4. To bill the patient directly when service are not covered by the Provincial or Federal health insurance plan

Employees: Personal information is collected about prospective employees or employees.

This information is collected only to confirm data about the prospective employee, so as to confirm qualifications and certifications of their respective professional bodies. Employees of True North Imaging must submit personal information to qualify for certain insurance programs, and to submit data to Federal and Provincial agencies such as the Canada Customs and Revenue Agency.

All personal information collected is done with the informed or implied consent of the individual according to Federal and Provincial laws.

LIMITING USE, DISCLOSURE & RETENTION

Information can only be used and disclosed for the purpose for which it was collected and will be retained only as long as it is necessary to fulfill the purpose.

True North Imaging may disclose personal information if:

- Required by law
- It is necessary for the health and well-being of the individual
- If it is consented to by the individual
- For normal personnel and benefits administration
- In the context of providing references regarding current or prospective employees
- To an agent of True North Imaging for the purposes of collecting outstanding accounts

Where personal information has been used to make a decision about a vendor or employee, True North Imaging shall retain, for a period of time that is reasonably sufficient to allow access by the vendor or employee, either the actual information or the rationale for making the decision. Personal information shall be destroyed by shredding or electronic destruction.

Information retained for research purposes, beyond the period for which it was originally intended, shall be made anonymous.

ACCURACY

Information must be accurate, complete and as up-to-date as possible. The accuracy of information is dependent on the information provided by the employee, patient or other. True North Imaging will review all patient requisitions to ensure that information is as complete as required for accurate interpretation of imaging exams and procedures.

True North Imaging shall update personal information about patients, employees and vendors as and when necessary, to fulfill the identified purposes or upon notification of the individual.

Employee information that is used on an ongoing basis, including information that is disclosed to third parties may be updated as required.

SAFEGUARDS

Information must be protected by adequate safeguards appropriate to the sensitivity of the information.

Safeguards in place include:

- Physical measures including locked file cabinets, restricted access to imaging facilities and restricted access to all offices.
- The use of passwords and limitation of access to electronic storage.

All employees are required to sign a confidentiality agreement and instructed in the importance of maintaining confidentiality. All inquiries as to personal information must be made through True North Imaging staff authorized to release such information, and standards and procedures for disclosure are in place to ensure no personal information is released to those individuals who are not authorized to receive it by Act or Regulation.

Destruction of personal information will take place only under the most secure circumstances to prevent unauthorized parties from gaining access to the information.

NOTE: The True North Imaging Privacy Officer shall notify an individual at the first reasonable opportunity if their personal information is stolen, lost or accessed by unauthorized persons.

OPENNESS

True North Imaging will make available to patients, employees and vendors information specific to its policies and practices relating to the management of personal information.

True North Imaging will make available:

- The name or title and address of the person accountable for True North Imaging privacy policies and practices and to whom complaints or inquiries can be forwarded
- The means by which one can gain access to their personal information held by True North Imaging
- A description of information held

Information on True North Imaging's policies and practices may be obtained at any True North Imaging location or through the designated individuals.

INDIVIDUAL ACCESS

True North Imaging will make personal information available for review and correction by the individual whose personal information it is. Upon request, True North Imaging will inform a patient or employee whether or not True North Imaging holds personal information about the individual.

In order for True North Imaging to process any request for access to personal information, the individual shall be required to provide sufficient information to provide an account of the existence, use, and disclosure of the personal information. Such information may include dates of service, referring physician, and any other data required to do the search. The information required for the disclosure will only be used for that purpose.

True North Imaging will respond to any request for personal information within 30 days and at no cost to the requesting individual. If required, True North Imaging may extend by another 30 days to allow for the collection of the data and the individual will be notified of this extension.

When an individual demonstrates the inaccuracy or incompleteness of the personal information in True North Imaging's possession, True North Imaging will amend the information as required. Where appropriate, the amended information will be transmitted to third parties having access to the information in question.

PROVIDE RECOURSE

All challenges regarding True North Imaging's compliance with the Privacy Principles should be directed to the designated Privacy Officer or delegate. The Privacy Officer's address will be made available to the individual making the challenge.

True North Imaging will investigate all complaints concerning compliance with True North Imaging Privacy policy and practices.
If a complaint is found to be justified, True North Imaging will take appropriate action to resolve the complaint including, if necessary, amending its policies and procedures. The individual making the complaint shall be informed of the outcome of the investigation.

ORGANIZATIONAL

Privacy Officer:

Jason Hartman, President
7330 Yonge Street, Suite 120
Thornhill, Ontario L4J 7Y7
Phone: 905-707-1777
Fax: 905-707-0616
Email: jhartman@truenorthimaging.com

PHYSICAL

- A written policy statement will be posted in all waiting rooms
- X-Ray bags and other examination files will not be stored in patient examination rooms
- All reports must be kept in a secure area
- Day sheets may not be kept in the exam rooms or patient areas unless the names are removed or obscured
- There will be designated, secure locations for all previous and pick up files

OCCUPATIONAL
HEALTH AND SAFETY

Revised July 2024
Revised April 2022
Revised March 2022
Reviewed March 2021
Revised August 2019
Revised March 2019
Revised July 2018
Revised Sept 2017
Reviewed March 2013
Reviewed October 2011
Revised June 2010
Revised July 2008
Revised January 2007
Revised August 2004
Reviewed December 2003
Revised March 14 2002
Reviewed April 2000
Reviewed Jan 05 1999
Reviewed December 1998
Revised April 16 1997

OCCUPATIONAL HEALTH AND SAFETY

HEALTH AND SAFETY POLICY

Management of True North Imaging is vitally interested in the health and safety of its employees. Protection of employees from injury or occupational disease is a major continuing objective. True North Imaging will make every effort to provide a safe, healthy work environment. All employees must be dedicated to the continuing objective of reducing risk of injury.

All staff are responsible to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the company.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization.

HEALTHY WORKPLACE POLICY

True North Imaging encourages staff to keep up with their immunization. True North Imaging does not keep a record of staff's immunization.

All Staff are encouraged to remain at home when ill with symptoms of infection. This includes not working when acutely ill with signs and symptoms likely due to a transmissible infection, such as fever, cough, influenza like symptoms, runny nose, sore throat, vomiting, diarrhea, rash or conjunctivitis.

If the decision is made that the staff must work when ill, appropriate PPE must be worn (ex. mask if you have cold). Continual washing of hands, this is essential to minimize the possibility of transmission of infection to co-workers and patients.

EMPLOYEE TRAINING

The Regional Supervisor or direct Manager will designate a staff member to oversee the orientation of any new staff member. Orientation will include, but not be limited to, the Health and Safety at Work test, WHMIS training manual, Fire and First Aid Plans, AODA training, Workplace Harassment and the True North Imaging Policy and Procedure Manual.

HEALTH AND SAFETY REPRESENTATIVE

Workplaces with more than 5 but less than 20 employees need a Health and Safety Representative (Section 8(1)). The representative is committed to improving health and safety conditions in the workplace.

The representative is selected by employees at their workplace (Section 8(5)) who do not exercise managerial function. This person does not require special training or certification. He/she is entitled to paid time to attend inspections and investigations (Section 8(15)) by the Ministry of Labour.

Responsibilities include:

- ✔ Identifying workplace dangers or hazards
- ✔ Inspecting the workplace once a month, including inspecting entire clinic for hazards, first aid box checklist, monthly fire extinguisher inspection
- ✔ Being consulted about workplace testing
- ✔ Making recommendations to the employer
- ✔ Investigating work refusals (Section 43(4)) and serious accidents (Section 8(14))
- ✔ Attend scheduled Health & Safety Meetings

A worker must report any hazard or contravention of the Occupational Health and Safety Act to their immediate supervisor (Section 28(1)© and 28(1)(d)). If the matter is not resolved, a worker should then refer it to a representative.

The representative should then:

1. Ask the supervisor to take part in resolving the problem.
2. Put this request in writing with a copy to the Health and Safety Chairperson
3. Notify the worker who reported the concern of a decision or recommendation made by the Health and Safety Team.

If a worker complaint cannot be resolved, the head office supervisor should be informed. If the head office supervisor is unable to resolve the issue, the Health and Safety Commission should be contacted to assist.

The representative can expect to obtain information regarding hazardous materials, processes, or equipment.

The employer must report any occupational illness of which he/she has knowledge (Section 52).

Workers are expected to provide information and assistance as may be required by a Ministry of Labour representative conducting an inspection or investigation. A worker must not interfere or knowingly provide a representative with false information.

For further information, see Sections 8, 9, 10, and 11 of the Occupational Health and Safety Act.

Workplace Anti-violence, Anti-discrimination, Racism, Harassment, and Sexual Harassment Policy (Bills 168 and 132) - Ontario

Intent

True North Imaging is committed to building and preserving for its employees, patients and visitors of our establishment a safe, productive, and healthy working environment based on mutual respect. In pursuit of this goal, True North Imaging does not condone and will not tolerate acts of violence, harassment, discrimination or racism.

True North Imaging believes every person has the right to equal and fair treatment regardless of their race (including First Nation, Metis and Inuit), creed, sexual orientation or disability.

Our Workplace Anti-violence, Anti-discrimination, Racism, Harassment, and Sexual Harassment Policy is not meant to stop free speech or to interfere with everyday interactions. However, what one person finds inoffensive, others may not. Usually, harassment can be easily distinguished from normal, mutually acceptable socializing. It is important to remember that it is the perception of the receiver that determines whether the potentially offensive message is acceptable or not, be it spoken, gestural, pictorial, or some other form of communication which may be deemed objectionable or unwelcome.

Definitions

Workplace violence: workplace violence is the exercise, statement, or behavior of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker, such as:

- Physical acts (e.g., hitting, shoving, pushing, kicking, sexual assault, throwing an object at a worker, kicking an object the worker is standing on such as a ladder, or trying to run down a worker using a vehicle or equipment such as a forklift);
- Any threat, behavior, or action which is interpreted to carry the potential to harm or endanger the safety of others, result in an act of aggression, or destroy or damage property; or
- Disruptive behavior that is not appropriate to the work environment (e.g., yelling or swearing).

Domestic violence: a person who has a personal relationship with a worker—such as a spouse or former spouse, current or former intimate partner or a family member—may physically harm, or attempt or threaten to physically harm, that worker at work. In these situations, domestic violence is considered workplace violence.

Discrimination: means any form of unequal treatment based on age, creed (religion, including indigenous spiritual practices), sex (including pregnancy and breastfeeding), sexual orientation, gender identity, gender expression, family status, marital status, disability (mental, physical, developmental or learning), race, ancestry, place of origin, ethnic origin, citizenship, colour, record of offences (criminal conviction for a provincial offence, or for an offence for which a pardon has been received), whether imposing extra burdens or denying benefits. It may be

intentional or unintentional. It may involve direct actions that are discriminatory on their face, or it may involve rules, practices or procedures that appear neutral, but disadvantage certain groups of people. Discrimination may take obvious forms, or it may happen in very subtle ways. Even if there are many factors affecting a decision or action, if discrimination is one factor, that is a violation of this policy.

Racial/ethnic harassment: any conduct or comment which causes humiliation to an employee, patient or visitor of True North Imaging because of their racial or ethnic background, their colour, place of birth, citizenship, or ancestry. Examples of conduct which may be racial or ethnic harassment include:

- Unwelcome remarks, jokes, or innuendos about a person's racial or ethnic origin; Colour, place of birth, citizenship, or ancestry;
- Displaying racist or derogatory pictures or other offensive material;
- Insulting gestures or practical jokes based on racial or ethnic grounds which create awkwardness or embarrassment; and
- Refusing to speak to or work with someone or treating someone differently because of their ethnic or racial background.

Personal harassment: any unsolicited, unwelcome, disrespectful, or offensive behavior that has an underlying sexual, bigoted, ethnic, or racial connotation and can be typified as:

- Behavior that is hostile in nature or intends to degrade an individual based on personal attributes, including age, race, nationality, disability, family status, religion, gender, sexual orientation, gender identity, gender expression, or any other protected ground under human rights legislation.
- Sexual solicitation or advance made by a person in a position to confer, grant, or deny a benefit or advancement to the person, where the person making the solicitation or advance knows or ought reasonably to know that it is unwelcome;
- Reprisal or a threat of reprisal for the rejection of a sexual solicitation or advance where the reprisal is made or threatened by a person in a position to confer, grant, or deny a benefit or advancement to the person.
- Unwelcome remarks, jokes, innuendos, propositions, or taunting about a person's body, attire, sex or sexual orientation, or religion;
- Suggestive or offensive remarks;
- Bragging about sexual prowess;
- Offensive jokes or comments of a sexual nature about an employee;
- Unwelcome language related to gender;
- Displaying of pornographic or sexist pictures or materials;
- Leering (suggestive persistent staring);
- Physical contact such as touching, patting, or pinching, with an underlying sexual connotation;
- Sexual assault:
- For the most part, victims of sexual harassment are female; however, conduct directed by female employees towards males or between persons of the same sex can also be held to constitute sexual harassment;
- Any actions that create a hostile, intimidating, or offensive workplace, which may include physical, verbal, written, graphic, or electronic means; and
- Any threats of physical violence that endanger the health and safety of the employee.

The following definitions are taken from the Occupational Health and Safety Act*:*

Workplace Harassment –
(a) engaging in a course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome; or
(b) workplace sexual harassment.

Workplace Sexual Harassment –
(a) engaging in a course of vexatious comment or conduct against a worker in a workplace because of sex, sexual orientation, gender identity or gender expression, where the course of comment or conduct is known or ought reasonably to be known to be unwelcome, or
(b) making a sexual solicitation or advance where the person making the solicitation or advance is in a position to confer, grant or deny a benefit or advancement to the worker and the person knows or ought reasonably to know that the solicitation or advance is unwelcome.

Guidelines

True North Imaging is committed to providing a safe and healthy work environment for it's employees, patients and persons visiting the facilities, free from violence, threats of violence, discrimination, racism, harassment, sexual harassment, intimidation, and any other misconduct. Similarly, weapons are strictly prohibited from the company's premises; violators will be subject to disciplinary action, and the incident will be reported to the police.

It is also a violation of the Workplace Anti-violence, Anti-Discrimination, Harassment, and Sexual Harassment Policy of True North Imaging for anyone to knowingly make a false complaint of violence, discrimination or harassment or to provide false information about a complaint. Individuals who violate this policy are subject to disciplinary and corrective action, up to and including termination of employment.

This policy prohibits reprisals against individuals acting in good faith who report incidents of workplace violence or act as witnesses. Management will take all reasonable and practical measures to prevent reprisals, threats of reprisal, or further violence. Reprisal is defined as any act of retaliation, either direct or indirect.

True North Imaging will ensure that all employees are trained and educated on violence, discrimination and harassment and that they are clear about their roles and responsibilities, as well as this policy, the corresponding program, and all workplace procedures. In addition, a copy of this policy will be made available to all employees.

Application of this Policy

This policy applies to all individuals working for the organization, including front-line employees, temporary employees, contract service providers, contractors, all supervisory personnel, managers, officers, and directors. The organization will not tolerate violence or harassment, whether engaged in by fellow employees, managers, officers, directors, or contract service providers of the organization.

True North Imaging will not tolerate any form of harassment, discrimination or racism against

job candidates and employees on any grounds listed in the definitions for violence and harassment, whether during the hiring process or during employment. This commitment applies to such areas as training, performance assessment, promotions, transfers, layoffs, remuneration, and all other employment practices and working conditions.

All True North Imaging employees are personally accountable and responsible for enforcing this policy and must make every effort to prevent discrimination or harassing behaviour and to intervene immediately if they observe a problem or if a problem is reported to them.

For the purposes of this policy, harassment and bullying can occur:

- At the workplace;
- At employment-related social functions;
- In the course of work assignments outside the workplace;
- During work-related travel;
- Over the telephone, if the conversation is work-related; or
- Elsewhere, if the person is there as a result of work-related responsibilities or a work-related relationship.

Violence Risk Assessment

True North Imaging will conduct a risk assessment of the work environment to identify any issues related to potential violence that may affect the operation and will institute measures to control any identified risks to employee safety. This information will be provided to the joint health and safety committee or safety representative.

The risk assessment may include review of records and reports: e.g., security reports, employee incident reports, patient complaints, staff perception surveys, health and safety inspection reports, first aid records, or other related records. Specific areas that may contribute to risk of violence may include, but are not limited to, contact with the public, exchange of money, receiving doors, and working alone or at night. Research may also include a review of similar workplaces with respect to their history of violence.

True North Imaging will communicate information relating to a person with a history of violence where:

- Workers may reasonably be expected to come into contact with the person in the performance of their job duties; and
- There is a potential risk of workplace violence as a result of interactions with the person with a history of violence.

The company will only disclose personal information that is deemed reasonably necessary to protect the worker from physical harm.

Reporting Violence or Bullying

If you are either directly affected by or witness to any violence in the workplace, it is imperative for the safety of all True North Imaging employees that the incident be reported without delay. Reporting any violence or potentially violent situations should be done immediately to management, or the Human Resources department.

Investigating Reports of Violence or Bullying

The company shall:

- Investigate all reported acts and incidents of violence, and consult with other parties (e.g., legal counsel, health and safety consultants, JHSCs, employee assistance provider, human rights office, local police services).
- Take all reasonable measures to eliminate or mitigate risks identified by the incident.
- Document the incident, its investigation, and corrective action taken.
- Submit a report of the incident to the Ministry of Labour where an employee incurs a lost time injury as a result of violence in the workplace.
- Review this policy and hazard assessment annually, or as changes to job responsibilities or environments occur, and revise the assessment as needed.
- Review annually, in conjunction with review of the hazard assessment, the effectiveness of actions taken to minimize or eliminate workplace violence and make improvements to procedures, as required.

The joint health and safety committees/safety representative will:

- Review the Workplace Violence Hazard Assessment results and provide recommendations to management to reduce or eliminate the risk of violence.
- Review all reports forwarded to the JHSC regarding workplace violence and other incident reports as appropriate pertaining to incidents of workplace violence that result in personal injury or threat of personal injury, property damage, or police involvement.
- Participate in the investigation of critical injuries (e.g., incidents that place life in jeopardy or result in substantial blood loss or fracture of leg or arm.)
- Recommend corrective measures for the improvement of the health and safety of workers.
- Respond to employee concerns related to workplace violence and communicate these to management.

In addition, JHSCs may participate in the investigation of reported incidents that result in personal injury or have the potential to result in injury.

Reporting Discrimination or Harassment

Informal Procedure

If you believe you have been personally harassed you may:

- Confront the harasser personally or in writing pointing out the unwelcome behaviour and requesting that it stop; or
- Discuss the situation with the harasser’s supervisor, your supervisor or any other supervisor other than your own.

Any employee who feels discriminated against or harassed can and should, in all confidence and without fear of reprisal, personally report the facts directly to your supervisor or manager, or to another member of management if the complaint relates to your supervisor or manager.

Formal Procedure

If you believe you have been personally harassed, you may make a written complaint. The written complaint must be delivered to your immediate supervisor. Your complaint should include:

- The approximate date and time of each incident you wish to report;
- The name of the person or persons involved in each incident;
- The name of any person or persons who witnessed each incident; and
- A full description of what occurred in each incident.

Investigating Reports of Discrimination or Harassment

Once a written complaint has been received, True North Imaging will complete a thorough investigation. The organization will ensure that, where practicable, the investigation is completed within 90 days of the complaint being filed.

Harassment should not be ignored, as silence can and often is interpreted as acceptance. Employees will not be demoted, dismissed, disciplined, or denied a promotion, advancement, or employment opportunities because they rejected sexual advances or because they lodged a complaint when they honestly believed they were being harassed or discriminated against.

True North Imaging will ensure that all information obtained during the course of an investigation will not be disclosed, unless the disclosure is necessary for the purposes of investigating or taking corrective action or is otherwise required by law.

For the purposes of this section the following definitions apply:

Complainant – The person who has made a complaint about another individual whom they believe committed an act of violence, discrimination, racism or harassment against them.

Respondent – The person whom another individual has accused of committing an act of violence, discrimination, racism or harassment.

The investigation will include:

- Informing the respondent of the complaint;
- Interviewing the complainant, any person involved in the incident, and any identified witnesses; and
- Interviewing any other person who may have knowledge of the incidents related to the complaint or any other similar incidents.

A copy of the complaint, detailing the complainant's allegations, is then provided to the respondent.

- The respondent is invited to reply in writing to the complainant's allegations, and the reply will be made known to the complainant before the investigation proceeds further.
- The company will protect from unnecessary disclosure the details of the incident being investigated and the identities of the complainant and the respondent.

- During the investigation, the complainant and the respondent will be interviewed, as will any possible witnesses. Statements from all parties involved will be taken and documented, and a decision will be made.
- If necessary, the company may employ outside assistance or request the use of legal counsel.
- Employees will not be demoted, dismissed, disciplined, or denied a promotion, advancement, or employment opportunities because they rejected sexual advances of another employee or because they lodged a harassment complaint when they honestly believed they were being harassed.
- Upon completion of the investigation, True North Imaging will inform both the complainant and respondent in writing of the findings of the investigation and any corrective action that has been or will be taken as a result of the investigation.
- Where practicable, the complainant and respondent will receive notification of the results of the investigation within 10 days of the investigation being completed.

If the complainant decides not to lay a formal complaint, senior management may decide that a formal complaint is required (based on the investigation of the incident) and will file such documents with the person against whom the complaint is laid (the respondent).

If it is determined that harassment in any form has occurred, appropriate disciplinary measures will be taken as soon as possible.

Seeking Immediate Assistance

Canada's *Criminal Code* addresses violent acts, threats, and behavior, such as stalking. The police should be contacted immediately when an act of violence has occurred in the workplace or when someone in the workplace is threatened with violence. If an employee feels threatened by a coworker, volunteer, contractor, student, vendor, visitor, client, or customer, an immediate call to "911" is required.

The Right to Refuse Unsafe Work

- The right to refuse unsafe work is a legal right of every worker provided by the *Occupational Health and Safety Act*. True North Imaging is committed to ensuring a safe workplace.
- If you wish to pursue this right, please refer to the Work Refusal Policy.

Special Circumstances

Should an employee have a legal court order (e.g., a restraining order, or "no-contact" order) against another individual, the employee is encouraged to notify his or her supervisor, and to supply a copy of that order to the Human Resources department. This will be required in instances where the employee strongly feels that the aggressor may attempt to contact that employee at True North Imaging, in direct violation of the court order, so that True North Imaging may take all reasonable actions to protect the employee. Such information shall be kept confidential and protected in accordance with all applicable legislation.

If any visitor to True North Imaging workplace is seen with a weapon (or is known to possess one), or makes a verbal threat or assault against an employee or another individual, employee witnesses are required to immediately contact the police, emergency response services and

their immediate supervisor

All records of harassment and subsequent investigations are considered confidential and will not be disclosed to anyone except to the extent required by law.

In cases where criminal proceedings are forthcoming, True North Imaging will assist police agencies, lawyers, insurance companies, and courts to the fullest extent.

Fraudulent or Malicious Complaints

This Anti-violence, Harassment, and Sexual Harassment Policy must never be used to bring fraudulent or malicious complaints against employees. It is important to realize that unfounded or frivolous allegations of personal harassment may cause both the accused person and the company significant damage. If it is determined by the company that any employee has knowingly made false statements regarding an allegation of personal harassment, immediate disciplinary action will be taken.

Disciplinary Measures

If it is determined by the company that any employee has been involved in a violent behavior, unacceptable conduct, or harassment of another employee, immediate disciplinary action will be taken. Such disciplinary action may involve counseling, a formal warning, or dismissal.

Record Keeping

True North Imaging will ensure that appropriate records of complaints and investigations relating to workplace harassment and sexual harassment are kept, including:

- A copy of the complaint or details about the incident;
- A record of the investigation including notes;
- A copy of the investigation report (if any);
- A summary of the results of the investigation that was provided to the worker who allegedly experienced the workplace harassment and the alleged harasser, if the alleged harasser is a worker of the employer; and
- A copy of any corrective action taken to address the complaint or incident of workplace harassment.

Confidentiality

True North Imaging will do everything it can to protect the privacy of the individuals involved and to ensure that complainants and respondents are treated fairly and respectfully. True North Imaging will protect this privacy so long as doing so remains consistent with the enforcement of this policy and adherence to the law. Neither the name of the person reporting the facts nor the circumstances surrounding them will be disclosed to anyone whatsoever, unless such disclosure is necessary for an investigation or disciplinary action. Any disciplinary action will be determined by the company and will be proportional to the seriousness of the behavior concerned.

True North Imaging will also provide appropriate assistance to any employee who is the victim of violence, discrimination, or harassment.

Managing and Coaching

Counseling, performance appraisal, work assignment, and the implementation of disciplinary actions are not forms of harassment, and this policy does not restrict a manager's or supervisor's responsibilities in these areas.

Policy Review

As required by the *Occupational Health and Safety Act*, True North Imaging will review this policy annually and will post the policy in a conspicuous place in the workplace.

Workplace Anti-violence, Harassment, Racism and Sexual Harassment Policy (Bills 168 and 132) - Ontario

Acknowledgment and Agreement

I, _____, acknowledge that I have read and understand the Workplace Anti-violence, Harassment, Racism and Sexual Harassment Policy of True North Imaging. I understand that if I violate the rules set forth by this policy, I may face disciplinary action up to and including termination of employment.

Name: _____

Signature: _____

Date: _____

Witness: _____

WORKPLACE VIOLENCE AND HARASSMENT POLICY STATEMENT

The management of True North Imaging is committed to the prevention of workplace violence and harassment and is ultimately responsible for worker health and safety. True North Imaging is committed to providing a work environment in which all individuals are treated with respect and dignity. True North Imaging will take whatever steps are required to protect our workers from workplace violence and harassment from all sources.

WORKPLACE VIOLENCE IS:
The exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker an attempt to exercise physical force against a worker, in a workplace, that could cause physical injury to the worker a statement or behavior that it is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker.

WORKPLACE HARASSMENT IS:
Engaging in course of vexatious comment or conduct against a worker in a workplace that is known or ought reasonably to be known to be unwelcome bullying, teasing, intimidating or offensive jokes or innuendos displaying or circulating offensive pictures or materials offensive or intimidating phone calls.

Violent behavior in the workplace is unacceptable from anyone. This policy applies to everyone (i.e.: visitors, patients, delivery persons, etc.). Everyone is expected to uphold this policy and to work together to prevent workplace violence and harassment.

True North Imaging has implemented the following measures and procedures to protect workers from workplace violence:

1. Buddy System – No worker should be left alone on True North Imaging premises
2. Signaling other employee's- If you are in your area alone and are feeling threatened or harassed, signal another member of staff by using the intercom device on your telephone.

The following measures and procedures should be taken by the worker:

1. call your immediate supervisor, and/or if you feel that there is an immediate threat/danger, call 911
2. fill out an incident report (within 24 hours of the incident) and hand it in to your immediate supervisor.

Supervisors will adhere to this policy and the supporting program. Supervisors are responsible for ensuring that measures and procedures are followed by workers and that workers have the information that they need to protect themselves.

Every worker must work in compliance with this policy and the supporting program. All workers are encouraged to raise any concerns about workplace violence and to report any violent incidents, harassment issues or threats to their immediate supervisor.

Management pledges to investigate and deal with all incidents and complaints of workplace violence and harassment in a timely and fair manner, respecting the privacy of all concerned to the extent possible, and appropriate action will be taken.

True North Imaging, as the employer, will ensure that this policy is implemented and maintained and that all workers and supervisors have the appropriate information and instruction to protect them from violence and harassment in the workplace.

Nothing in this policy prevents or discourages a worker from filing an application with the Human Rights Tribunal of Ontario on a matter related to Ontario's Human Rights Code within one year of the last alleged incident. A worker also retains the right to exercise any other legal avenues that may be available.

Signed: _____ Date: _____
President

HARASSMENT BY PATIENTS

Should it occur that a patient displays inappropriate behavior while on the premises or during an examination, the requested examination may be refused or terminated. The patient should then be asked to leave.

Immediate notification must be made to the Medical Director, VP Operations and/or Regional Supervisor. Your area supervisor should be aware of the situation prior to any refusal of examination.

A written report must be completed and submitted to your regional supervisor, Dr. A. Hartman, and Dr. J. Hartman. The written report must be completed before the end of the shift that the incident occurred.

INCIDENT REPORT - PATIENT/VISITOR

Policy:

All incidents involving patients or visitors must be reported and properly documented.

Definition:

An incident is any unusual or unexpected happening involving patients or visitors. Incidents include, for example, a fall, a contrast error, the loss of property, severe and/or persistent chest pain, hospitalization, etc.

Procedure:

1. Attend to the patient's immediate needs and get further medical assistance if necessary.
2. Notify your head office and one of the following people: Regional Supervisor, VP Operations or Medical Director.
3. An Incident Report Form must be completed on the same day as the incident occurs. All sections must be completed (see OPQA22).
4. The staff member involved in or witnessing the incident must initiate the reporting of the incident and describe in a concise but detailed manner, the incident.
5. If an injury, contrast error or other patient care related incident occurs, a physician must examine the patient and complete the Physician's Report Section of the Incident Report.
6. If you are uncertain as to whether an incident should be reported, discuss it first with the immediate Supervisor.
7. Incidents involving staff members are covered by the policy/procedure "Incident Report" - Staff member.

NOTE: If the RPO is not in attendance, a list of doctors who may be readily available from the building must be maintained. If no physician can be found and the patient is in distress, call 911, give your name and inform the communications operator of the situation.

Appendix Y **PATIENT/VISITOR INCIDENT REPORT FORM**

(An incident is any unusual or unexpected happening which involves patients, patient care giver or visitor)

Date and time of incident: _____

Clinic: _____

Location of Incident: _____

1. **PATIENT INFORMATION:**

□ Patient – Case #: _____ □ Visitor □ Other _____

Name: _____ Approximate Age: _____

Address: _____ Telephone #: _____

Pre-incident condition (e.g., Was patient oriented or confused): _____

Any physical disabilities? □ No □ Yes (specify): _____

Patient referred by: _____

Procedure to be performed: _____

2. **INCIDENT:** What happened; what resulted; for example, what part of the body was affected (R or L) cause of the incident if known etc…)

_____

_____

Did anyone else witness the incident? □ No □ Yes

_____

Had any part of the procedure been completed at the time of the incident? □ No □ Yes

State safety device (s) in use: _____

Reaction of patient: _____

3: ACTIONS TAKEN (State immediate corrective/preventative measures taken)

X-Ray ordered? □ No □ Yes

Name of physician notified: _____

Name of person at TRUE NORTH IMAGING Head Office incident reported to or discussed with:

_____

How did the patient leave? □ Unescorted □ Escorted by: _____

□ By Ambulance □ other (specify)

Was the patient examined by a physician? □ No □ Yes

Follow-up recommended? □ No □ Yes (when) _____

4: PHYSICIAN'S REPORT

_____

_____

_____

FIRST AID

a. *Safety Associations*:

The nine Industrial Safety Associations in Ontario were established to provide expert advice and assistance in safety procedures and accident prevention. Each association specializes in a particular type of industry, and each makes available videos on accident prevention within its own industry. These videos may be obtained online from the individual associations.

b. *Guidelines for Contents of First-Aid Boxes*:

First-aid boxes must be available at all places of employment. These will provide workers who have first-aid training with the equipment they need to offer emergency first-aid service quickly and safely. WSIB Regulation 1101 of the First-Aid Regulations list specific items that must be included in FirstAid Boxes in workplaces of different types and sizes. The quantities of the contents which are specified may be increased to suit the needs of a particular workplace.

In a location where a physician or registered nurse is available, the employer may authorize him/her to expand the contents of the First-Aid Boxes.

Unnecessary equipment, or equipment that may deteriorate (for example, adhesive tape) or that is potentially dangerous (for example, greasy ointment) should not be included in a First-Aid Box. Section 6 of Regulation 1101 requires that the boxes and their contents be checked regularly, four times a year, to ensure that everything is in good order.

Advice about additional items for First-Aid Boxes that might be appropriate in a specific type of work environment may be obtained from the head office supervisor.

c. *Guidelines Used for First-Aid Regulations & Requirements*:

The poster "In Case of Injury at Work" must be posted on the Health and Safety board which is located in the common area.

Employers in industries in which it is considered proper may be required by the Board to maintain, as may be directed by the Board, such first-aid appliances and services as the Board may direct, and the Board may make such order respecting the expense thereof as may be considered just.

- The WSIB.
- Section 52 (11)

The Board has determined that all employers covered by the WSIB must meet certain criteria in matters of first aid.

Regulation 1101, incorporated into the WSIB, outlines in detail the obligations of employers in provision of first-aid equipment, facilities, and trained personnel in all workplaces.

IN ALL CASES OF ACCIDENT/OCCUPATIONAL EXPOSURE

The Employer Shall:

1. Furnish first-aid in accordance with the Regulations.
2. Record first-aid attention.
3. Provide immediate transportation to a hospital, or doctor, or the worker's home, when necessary.

4. Complete and provide Treatment Memorandum Form 156 if a worker needs more than first aid treatment.
5. Complete, provide, and submit WSIB Form 7, Employer's Report of Injury/exposure

The Worker Shall:

1. Promptly obtain the necessary and proper first aid.
2. Notify the employer immediately of any accident/exposure requiring "medical aid".
3. Claim benefits if the injury/exposure causes him/her to seek health care or lose work hours.
4. If claiming benefits, complete and sign WSIB Form 6.

d. *First-Aid Training for Workers*:

The Regulation under the Workers' Compensation Act requires all employers to ensure that First-Aid Boxes and stations are in the charge of workers who hold a valid St. John Ambulance First-Aid Certificates or their equivalent. A copy of the certificate is to be kept on file in the Q.A. Manual.

In order to encourage and assist employers to have their workers trained in first aid, the Board will pay for the training of all employees every 2 years.

Employers may make training arrangements directly with St. John Ambulance or Red Cross or any other registered training program certified in BCLS.

All Clinics will have at least one staff member scheduled that is certified in BCLS per shift.

e. *First-Aid Requirements*:

1. Every employer employing **not more than five employees** in any one shift at a place of employment shall provide and maintain at the place of employment a first-aid station with a First-Aid Box containing as a minimum:
   a. a current edition of a standard St. John Ambulance First-Aid Manual.
   b. 1 card of safety pins
   c. Dressings consisting of:
      - 12 adhesive dressings individually wrapped
      - 4 sterile gauze pads, 3 inches square
      - 2 rolls of gauze bandages, 2 inches wide
      - 2 field dressings, 4 inches square or two 4-inch sterile bandage compresses
      - 1 triangular bandage

The employer shall ensure that the first-aid station is at all times in the charge of an employee who:

a) is the holder of a valid St. John Ambulance Emergency First-Aid Certificate or its equivalent.
b) Works in the immediate vicinity of the station

2. Every employer employing **more than five workers and not more than 15 workers** in any one shift at a place of employment shall provide and maintain a first-aid station with a First-Aid Box containing as a minimum:
    a. a current edition of a standard St. John Ambulance First-Aid Manual.
    b. 1 card of safety pins
    c. Dressings consisting of:
        - 24 adhesive dressings individually wrapped
        - 12 sterile gauze pads, 3 inches square
        - 4 rolls of 2-inch gauze bandages
        - 4 rolls of 4-inch gauze bandages
        - 4 sterile surgical pads suitable for pressure dressing, individually wrapped
        - 6 triangular bandages
        - 2 rolls of splint padding
        - 1 roll-up splint

The employer shall ensure that the first-aid station is at all times in the charge of a worker who:

a. is the holder of a valid St. John Ambulance Standard First-Aid Certificate or equivalent
b. works in the immediate vicinity of the box.

wsib ONTARIO | **Employer's report of injury/disease (Form 7)** **7**

Claim number

A. Worker information

Job title/Occupation (at the time of accident/illness - do not use abbreviations)			Length of time in this position while working for you	Social insurance number
Please check if this worker is a: ☐ executive ☐ elected official ☐ owner ☐ spouse or relative of the employer				Worker reference number
Last name	First name		Is the worker covered by a Union/Collective Agreement? ☐ yes ☐ no	
Address (number, street, apt., suite, unit)		City/Town	Worker's preferred language ☐ English ☐ French ☐ Other	
Province	Postal code	Telephone	Date of birth (dd/mm/yy)	Sex ☐ Male ☐ Female	Date of hire (dd/mm/yy)

B. Employer information

Trade and Legal name (if different provide both)		Check one: ☐ Firm number ☐ Account number	Provide number
Mailing address		Class/Subclass	NAICS Code
City/Town	Province	Postal code	Telephone
Description of business activity		Does your firm have 20 or more workers? ☐ yes ☐ no	Fax number
Branch address where worker is based (if different from mailing address - no abbreviations)			
City/Town	Province	Postal code	Alternate telephone

C. Accident/illness dates and details

1. Date and hour of accident/Awareness of illness ☐ AM ☐ PM

Date and hour reported to employer ☐ AM ☐ PM

2. Who was the accident/illness reported to? (name and position)

Telephone

3. Was the accident/illness:
- ☐ Sudden specific event/occurence
- ☐ Gradually occurring overtime
- ☐ Occupational disease
- ☐ Fatality

4. Type of accident/illness: (please check all that apply)
- ☐ Struck/Caught
- ☐ Overexertion
- ☐ Repetition
- ☐ Fire/Explosion
- ☐ Fall
- ☐ Harmful substances/environmental
- ☐ Assault
- ☐ Slip/Trip
- ☐ Motor vehicle incident
- ☐ Other

5. Area of injury (body part) - (Please check all that apply)

			Left		Right	Left		Right	Left		Right	Left		Right
☐ Head	☐ Teeth	☐ Upper back	☐	Shoulder	☐	☐	Wrist	☐	☐	Hip	☐	☐	Ankle	☐
☐ Face	☐ Neck	☐ Lower back	☐	Arm	☐	☐	Hand	☐	☐	Thigh	☐	☐	Foot	☐
☐ Eye(s)	☐ Chest	☐ Abdomen	☐	Elbow	☐	☐	Finger(s)	☐	☐	Knee	☐	☐	Toe(s)	☐
☐ Ear(s)		☐ Pelvis	☐	Forearm	☐				☐	Lower leg	☐			
☐ Other:														

6. Describe what happened to cause the accident/illness and what the worker was doing at the time (lifting a 50 lb. box, slipped on wet floor, repetitive movements, etc.). Include what the injury is and any details of equipment, materials, environmental conditions (work area, temperature, noise, chemical gas, fumes, other person) that may have contributed. **For a condition that occured gradually over time, please attach a description of the physical activity required to do the work.**

Contact accessibility@wsib.on.ca if you require this communication in an alternative format.

wsib ONTARIO

Worker's report of injury/disease (Form 6)

6 Claim number

A. Worker information

Last name	First name	Social Insurance Number

Address (number, street, apt., suite, unit)	Telephone

City/Town	Province	Postal code	Alternate/Cell phone

Job title/Occupation (at the time you were hurt)	Date you started with employer (dd/mm/yy)	How long have you been doing this job for this employer?

Only check if you are one of the following:
☐ executive ☐ elected official ☐ owner ☐ spouse or relative of the employer

Date of birth (dd/mm/yy)

Sex
☐ Male ☐ Female

Your preferred language
☐ English ☐ French ☐ Other .....

Would an interpreter be helpful? ☐ yes ☐ no

Are you a member of a union? ☐ yes ☐ no

Do you authorize your union to represent you in this claim? ☐ yes ☐ no

If yes, do you consent to the disclosure of verbal claim file status information to your union representative? ☐ yes ☐ no

Provide your union name and local

B. Employer information

Company/Employer name

Address

City/Town	Province	Postal code

Your immediate supervisor's name	Company telephone

C. Accident/illness dates and details

1. Date and hour of accident/Awareness of illness (dd/mm/yy) ☐ AM ☐ PM

Date and hour reported to employer (dd/mm/yy) ☐ AM ☐ PM

2. Who did you report this accident/illness to? (name and position)

Telephone

3. Area of injury (body part) - (please check all that apply)

			Left	Right	Left	Right	Left	Right	Left	Right
☐ Head	☐ Teeth	☐ Upper back	☐ Shoulder	☐	☐ Wrist	☐	☐ Hip	☐	☐ Ankle	☐
☐ Face	☐ Neck	☐ Lower back	☐ Arm	☐	☐ Hand	☐	☐ Thigh	☐	☐ Foot	☐
☐ Eye(s)	☐ Chest	☐ Abdomen	☐ Elbow	☐	☐ Finger(s)	☐	☐ Knee	☐	☐ Toe(s)	☐
☐ Ear(s)		☐ Pelvis	☐ Forearm	☐			☐ Lower leg	☐		

☐ Other: .....

Are you: ☐ Left handed ☐ Right handed

4. Did the accident/illness happen on the employer's property or work site? ☐ yes ☐ no

Specify where it happened (shop floor, warehouse, client/customer site, parking lot, etc.):

5. Did it happen outside the Province of Ontario? ☐ yes ☐ no

If yes, indicate where (city, province/state, country):

6. Have you hurt this area(s) of your body before? ☐ yes ☐ no

7. Do you have any prior related WSIB/WCB claims?
☐ no ☐ yes - in Ontario ☐ yes - outside Ontario

Contact accessibility@wsib.on.ca if you require this communication in an alternative format.

In case of injury or illness at work

1 Get medical help

Your employer is responsible for providing first aid. See a doctor or go to a hospital if you need treatment. Your employer pays for your transportation on the day of injury.

2 Document

Tell your employer about your injury or illness. They investigate and keep a record of what happened.

3 Report to the WSIB

You can scan the QR code below or visit wsib.ca/reporting and follow the steps to submit a Worker's Report of Injury/Illness (form 6). Your employer must report an injury or illness to us within three days.

4 Work together

We work with you and your employer to help you recover and return to work safely, at the right time.

Scan the QR code or visit wsib.ca/reporting to submit a Worker's Report of Injury/Illness (form 6).

Questions? We're here to help.

Sign up for our online services to send us a message anytime, anywhere, or call us at 1-800-387-0750 or TTY: 1-800-387-0050.

Visit **wsib.ca/onlineservices** for details.

wsib ONTARIO

Ce document est disponible en français sous le titre : *En cas de lésion ou de maladie au travail* (03/2023)

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

Introduction:
The Workplace Hazardous Materials Information System (WHMIS) is a comprehensive national system for safe management of hazardous chemicals, which is legislated by both federal and provincial law.

WHMIS legislation provides that workers must be informed about the hazards in the workplace and that they receive appropriate training to enable them to work safely. To accomplish this, WHMIS requires all suppliers to label and prepare Material Safety Data Sheets (SDS) for products they make, import, package, or process that meet the hazard criteria set out in the Controlled Product Regulations under the Federal Hazardous Protection Act (HPA). The buyers of these controlled products must make sure that these products are correctly labeled and that SDS are available. Employers must set up worker education programs that instruct workers about the contents and significance of labels and SDS and how to work safely with hazardous materials.

The ultimate goal of the WHMIS program is to create a safer workplace by providing workers with the knowledge and tools to enable them to work safely.

Policy:
As per WHMIS legislation, a Joint Health and Safety Committee must be assigned if there are 20 or more employees at the workplace. The Joint Health and Safety Committee must report to the Board of Directors.

All employees are required to attend WHMIS training. All new employees must contact the Health and Safety Representative for training arrangements. True North Imaging will provide this training in-house on an annual basis when it is required. All employees are expected to apply the information from the provided lectures to ensure a safe workplace.

A WHMIS Manual is to be present in all offices. It will contain the True North Imaging WHMIS training package as well as all Material Safety Data Sheets for hazardous materials. Material Safety Data Sheets for consumer products located at your clinic can also be kept in this Manual. All employees must review the Manual annually.

A Master Chemical Inventory List of hazardous materials will be maintained at the Head Office. A chemical inventory list specific to each office must also be maintained and kept at that particular office. The list must contain all hazardous chemicals (i.e., processor chemistry). Should an additional chemical be added to the list, it must be reported to the Health and Safety Representative immediately. An SDS form will then be provided for the office and the chemical will be added to the SDS master list at Head Office.

Appendix Z

WHMIS CHEMICAL INVENTORY LIST

Clinic Name: _____

Month: _____ Year: _____

PRODUCT	SDS
PREempt HLD5	
Providone Iodine Solution	
Sani-Cloth Wipes	
Super Sani-Cloth Wipes	
Sani-Cloth Plus Germicidal Disposable Cloth	
Bleach	
PREempt Disinfectant Wipes	
Lysol Disinfectant Wipes – All Scents	
Clorox Commercial Disinfectant Wipes	
Lysol Disinfectant Spray – All Scents	
Healthcare Plus Clear Ultrasound Gel	
Healthcare Plus Lubricating Jelly	
Surgilube Sterile Lubricant Individual use	
Gentle Rain Extra Mild Hand Soap	
Hand Sanitizer 70% Alcohol	
One Step Hand Sanitizer 70% Alcohol	
Isopropyl 70% Rubbing Compound	
Medline Sterile Alcohol Prep Pads	

INCIDENT REPORT - EMPLOYEE

Policy:

All incidents (including accidents or work-related injury) involving staff must be immediately reported to the IMMEDIATE supervisor and properly documented.

Procedure:

1. Any person or persons injured in the facility shall have an Employee Incident Form submitted to their immediate supervisor and the Head Office Supervisor and Gerald Hartman.
2. Each form is filled in by the staff person injured or by the staff member witnessing the injury and by the physician called to assess the injury on the day of the injury

Appendix A1 **EMPLOYEE INCIDENT REPORT FORM**

Name			**SIN #**		**Date of Employment**
Address		**Postal Code**	**Sex**	**Age**	**Dept.**
Date of Incident	**Time**	**Date Reported**	**Time**	**Marital Status**	**Occupation**

History of incident, state exactly where incident occurred, what employee was doing, what happened to cause incident, and whether anyone else was involved.

Signature of dept. head/supervisor

Type of incident
___ Struck or contact by
___ Struck Against/ Contact With
___ Caught in, on, or between
___ Fall
___ Overexertion/strain
___ Exposure
___ Patient Action

Name & address of witness

What were the causes of the incident

___ Operating without authority **____ Working on moving equipment** **____ Inadequate illumination**
___ Failure to secure or warn **____ Distracting, Teasing, Misconduct** **____ Fire, Explosion, Atmos.**
___ Working at unsafe speed **____ Failure to use protective device** **____ Hazardous personal att.**
___ Unsafe Equipment **____ Wheeled equipment operation** **____ Unsafe design**
___ Unsafe loading, placing, etc **____ Not guarded** **____ Hazardous method**
___ Unsafe position or posture **____ Patient Action** **____ Outside Hazardous Condition**

Other explanation _____

Details of property damage:_____

Actions to prevent incident recurrence (check those actions taken to prevent recurrence

___ Reinstruction of person involved **____ Action to improve inspection** **____ Actions to improve design**
___ Reassignment of person **____ Equipment repair/replacement** **____ Check with manufacturer**
___ Order job safety analysis done **____ Correction of congested area** **____ Inform all dept. supervise.**
___ Improve PPE **____ Install guards/safety devices** **____ Disc. of person involved**

Describe details of corrective action:_____
_____

Signature of dept. head/Supervisor

Medical Attention Given (state what injury consisted of part of body involved, specify left/right)
_____
Name of employee's physician: _____

Has the employee had a previous similar disability? If yes, give details:_____

The employee probably should:

Undertake reg. duties **Light duties** **Remain off work for days**

FIRE PLAN

Policy:

All staff members must be fully knowledgeable of the Fire Plan pertaining to their facility. To this aim, a yearly review of the Fire Plan must be carried out and is mandatory for all True North Imaging staff members.

Procedure:

1. A review of the Fire Plan pertaining to your clinic will be held at least once a year by a designated staff member at the time of the Technical Audit.
2. The Fire Plan must be posted in the designated area(s).

Fire Prevention:

Everyone has a responsibility for fire prevention. Each staff must read the Fire Plan located on the Health and Safety board.

Fire Prevention & Electrical Safety:

If you notice patients, visitors, or staff smoking in a non-designated area, please direct them to an area that is designated as a smoking area (outside).

No extension cords are to be used without permission of the supervisor and then only in accordance with local electrical safety codes. Extension bars may be used as long as they have a surge protection.

Electrical plugs, wires, connecting cords on all equipment are to be checked and logged by the staff weekly and any problem is to be reported to the head office supervisor. Any electrically urgent items must be reported immediately. Also see RP Summary Sheets.
Smoke barrier doors are for our protection. If you notice an object in the way, please remove it to prevent these doors from being jammed open.

Fire Extinguisher:

Fire extinguisher(s) can be found _____. A designated staff member must check the status of the extinguisher monthly and record this on the Yearly Summary sheet. Contact the head office supervisor if the extinguisher is to be refilled/recharged.

Orientation:

All new employees are required to read the Fire Plan during orientation.

Fire Safety Training & Drills:

The key to effective action in fire emergencies is training. Each employee must be able to:

a. Initiate counter measures immediately at the scene of fire.
b. Respond to an alert that fire is somewhere in the building.
c. To take preventative measures.

Mock fire drills and alarm testing will be held at various times throughout the year in accordance with your facility building code.

THE FOLLOWING FIRE PLAN MUST BE TAILORED TO YOUR OFFICE SITE:

FIRE PLAN (Response to Fire):

1. *If You Hear an Alert Alarm*:
    - Be alert and ready for further instructions.
2. *If You Discover a Fire in Your Area*:
    - Remove any patients in the room out of danger and close the door. Pull the alarm.
    - Go to the phone and dial 911; give your name, location of fire and type of fire to the communications operator.
    - Close all doors and windows.
    - **IF POSSIBLE,** go back to the room and attempt to put out the fire using an extinguisher. If you cannot, just close the door to the fire area.
    - **DO NOT ATTEMPT TO USE THE FIRE HOSE!!**

In general, everyone should be removed from their respective rooms. Have a staff member positioned at the main corridor junction to direct firefighters.

3. *If You Hear an Evacuation Alarm*:
    - Remove patients, visitors, and staff behind fire doors.
    - Leave the Building: If evacuation of the building is required **DO NOT USE THE ELEVATORS.**
    - Assembly Point: Designated area, established by clinic supervisor.

If staff are away from the facility but in the building when the evacuation alarm sounds, they are to proceed directly to the assembly point.

Personnel may be requested to assist with duties such as checking area before leaving (offices, washrooms, etc) ensuring that everyone is accounted for, turning off lights in the fire area, turning off gasses (oxygen), turning off all electrical equipment and closing doors and windows.

MEDICAL EMERGENCY PLAN (Response To) including but not limited to Cardiac Arrest

1. Attend to the patient's needs – note time of incident.
2. Initiate first aid/CPR if required.
3. Ask the closest person to contact the nearest physician or to call 911 if required.
4. Remain with the patient until medical help arrives or the patient is stabilized.
5. Once the patient is stabilized, fill out a PATIENT INCIDENT REPORT

Make three (3) copies of the report:

1. Scan into Patient's file
2. Q.C. Binder
3. Head Office Supervisor

MISSING PATIENT POLICY

If a patient is suspected of going missing and has not walked out of the facility of their own free will, specific responses will take place which include searching for the missing patient, and notification of direct supervisor, and any outside agencies (911), if necessary.

PURPOSE OF PROCEDURE

To ensure the safe return of the missing patient.

1. call patient's cell phone, if no response, call the referring physician for home or emergency number.
2. notify them that their family member/friend has gone missing
3. conduct a search of the facility and let security know that a patient has gone missing
4. if you are still not able to reach the missing patient to ensure their safety, call 911
    - let them know the last time patient was seen
    - give a description of the missing patient ie: clothing, hair color, height, gender etc…
    - give the patients cell phone # and any emergency number you may have
    - let them know what you have done to locate the patient.

5. Fill out an incident report

RADIATION SAFETY POLICIES

1. All X-ray workers shall wear personal monitoring badges/TLDs throughout the working day. When not in use the badges/TLDs shall remain on the premises and be kept at a central storage point.
2. X-ray workers shall be advised of the results of the monitoring program. The Radiation Protection Officer shall investigate overexposures.
3. The maximum permissible dose levels should be tabulated in the code.
4. An X-ray worker should report confirmed pregnancy to the Radiation Safety Officer, who will then determine her future duties. The holding of patients during exposure by a pregnant person is absolutely forbidden.
5. Protective aprons (and gloves) must be of thickness appropriate to the work done. Regular tests by radiologic methods shall be performed to ensure the integrity of protective apparel.
6. Only essential personnel shall be in the X-ray room when an exposure is made. Such personnel shall wear protective apparel.

a. A technologist should not hold a patient during a radiographic exposure. Help from other personnel must be obtained should such needs arise a lead apron and if necessary, lead gloves must be given to a person holding a patient.

7. The control switch of a radiography machine shall be located so that the operator must remain in a protected area when making an X-ray exposure.
8. Without leaving the protected area, the operator shall:
    i. have a clear view of the patient
    ii. be able to communicate with the patient
9. Control areas shall be kept free from objects that significantly reduce the protected area available to operators.

10. Doors of X-ray rooms shall be closed during X-ray exposure.
11. Rota systems shall be established so that exposure burdens are evenly distributed between:
    i. Personnel called upon to support patients during X-ray work
    ii. Operators of mobile equipment
12. Special devices shall be used to immobilize small children.
13. With mobile equipment the primary beam shall be directed to an unoccupied location whenever possible. The operator shall be aproned, and other personnel will leave the area.
14. Minimum field sizes shall be used for all radiographic examinations. Evidence of collimation shall appear on an image whenever possible.
15. Gonadal protection shall be employed with children and adults in reproductive age range, in respect of both primary and scattered radiation, provided there will be no interference with the diagnostic image.
16. All requisitions must be checked with the radiologist or senior technologist before examination. Minimum number of views should be taken, and great care must be given to avoid any repeat examinations. High kV technique should be used except in the examination of fetal maturity.

a. Possibility of pregnancy must be considered. If this fact is determined, the technologist must check with the radiologist or physician who ordered the examination.

17. Chest, abdomen, lumbar spine, etc. should be measured and consideration given to subject type and pathology prior to the selection of factors in order to minimize repeat exposure due to incorrect technique.
18. The patient should be instructed as to what is expected of him/her during the examination, e.g., breath holding.
19. Any accidents involving the x-ray machine and patient must be reported to the Ministry of Health within **5** days.

BOMB THREAT POLICY & PROCEDURE

Purpose:

The purpose of this policy is to inform staff of precautions to be taken in the event of a bomb threat.

Upon receipt of a bomb threat, it is impossible to know if it is real or a hoax. Therefore, precautions need to be taken for the safety of our patients and employees.

Procedure:

If you receive a bomb threat over the phone, follow these procedures:

1. Keep the caller on the line as long as possible.
2. Ask the caller to repeat the message.
3. Ask the caller his/her name.
4. Ask the caller where the bomb is located.
5. Record every word spoken by the person making the call.
6. Record time call was received and terminated.
7. Inform the caller that the building is occupied and the detonation of a bomb could result in the death or serious injury to many innocent people.
8. Complete the attached bomb threat form to record the caller's characteristics.

If possible, during the call, try to notify your supervisor immediately or head office.

The supervisor or head office employee shall:

1. Call the Police Department at 911.
2. Call management if not present.
3. Organize staff to evacuate patients and staff upon police or administrative order.

Once the Police have arrived:

1. Keys shall be available so that searchers can inspect all rooms. Employee lockers will be searched. If padlocked, the padlock will be cut off.
2. The designee or management shall remain with the Search Commander during the entire search to provide assistance during the search.
3. If a suspected bomb is located within the building, the responsibility for investigation will be that of the law enforcement officials having jurisdiction over such matters.

Appendix A2 BOMB THREAT – TELEPHONE RECORDING PROCEDURE FORM

Use the following template in the situation of a potential bomb threat.

RECORD:

- Date: _____
- Your name: _____
- Duration of the call: _____
- Exact wording of the threat: _____

ASK THESE QUESTIONS:

- What time will the bomb explode? _____
- Where is it? _____
- Why did you place the bomb? _____
- What does it look like? _____
- Where are you calling from? _____
- What is your name? _____
- What type of bomb is it? _____

IDENTIFY THESE CHARACTERISTICS:

- Sex (Male/Female) _____
- Accent (English, French, other) _____
- Voice (loud, soft, etc.) _____
- Speech (fast, slow, etc.) _____
- Diction (good, nasal, lisp, etc.) _____
- Manner (calm, emotional vulgar, etc.) _____
- Background noises (music, animals,people,etc.) _____
- Was the voice familiar? Specify _____
- Was the caller familiar with the area? _____
- Did the caller name someone or something specific? _____

HOSTAGE TAKING POLICY & PROCEDURE

Purpose:

To provide the guidelines for staff to deal with the initial stages of a hostage taking to promote safety. The intended response is to evacuate all patients, staff and visitors from the immediate area as it is safe to do so, establish restrictive perimeters for the purpose of isolating the incident and for the Police to take care of the incident.

A hostage situation occurs when a person(s) barricades themselves into an area and/or unlawfully confines, imprisons or forcibly seizes another person(s) or for the purpose of gaining a perceived negotiating advantage.

Procedure:

1. CALL 9-1-1
2. Notify your supervisor and Head Office.
3. Do not attempt any aggressive action(s).
4. Provide details of the situation, if possible.
5. If possible, all other employees, patients and visitors should be moved to safety. Patients & staff will be confined to exam rooms with doors closed and locked; you may attempt to barricade the door if you are in a room where there is no lock on the door.
6. No patient, staff or visitor shall leave any area until directed by Police.
7. No one will leave the building without the approval of the Police.
8. Remain in your existing location until directed to move by the Police.
9. Police only should approach the area.

EVACUATION POLICY & PROCEDURE

Purpose:

To provide the guidelines for staff to deal with the initial stages of the evacuation policy to promote safety. The intended response is to evacuate all patients, staff and visitors from the immediate area as it is safe to do so.

Four Types of Evacuations

- Stay in Place. The first type of evacuation is known as stay in place and is used during a chemical or biological attack. ...
- Building Evacuation. The second type of evacuation is a building evacuation. ...
- Campus Evacuation. The third type of evacuation is a campus evacuation. ...
- City Evacuation.

Procedure

1. Stop all activities immediately. ...
2. Assess that all persons can evacuate the area. ...
3. Follow EXIT signs to the nearest safe exit. ...
4. Use the stairs. ...
5. Allow others to enter the stairwell. ...
6. Steer clear of hazards. ...
7. Move away from the building. ...
8. Do not re-enter the building without an “all clear”.

DISASTER POLICY & PROCEDURE

Purpose:

Disasters are classified into three types: **naturals, man-mades, and hybrid disasters**. It is believed that the three disaster types cover all disastrous events. No definition of disaster is universally accepted.

These types of disasters include:

- Tornadoes and Severe Storms.
- Hurricanes and Tropical Storms.
- Floods.
- Wildfires.
- Earthquakes.
- Drought.

Policy:

- emergency contact details for key personnel who have specific roles or responsibilities under the emergency plan, for example fire wardens, floor wardens and first aid officers
- contact details for local emergency services, for example police, fire brigade and poison information centre
- a description of the mechanisms for alerting people at the workplace to an emergency or possible emergency, for example siren or bell alarm
- evacuation procedures including arrangements for assisting any hearing, vision or mobility-impaired people
- a map of the workplace illustrating the location of fire protection equipment, emergency exits, assembly points
- triggers and processes for advising neighboring businesses about emergencies, and the post-incident follow-up process, for example notifying the regulator, organizing trauma counseling or medical treatment.
- Procedures for testing the emergency plan including the frequency of testing must be included.

HAZARDOUS SPILL POLICY

Each clinic must have a proper spill kit on hand, which is to include the following:

- Sand to contain the spill and provide traction
- Un-odorized kitty litter to contain and absorb the liquid spill
- Baking soda to neutralize the spill
- Proper PPE (goggles or face shield, gown, gloves, N95 respirator)
- Heavy duty garbage bags
- Plastic broom and dustpan

1. **IDENTIFY THE SUBSTANCE & DETERMINE THE RISK**
    - Quickly assess the spill, its hazards, and the danger to yourself and others. If the spilled chemicals are unknown, assume the worst, evacuate and call 911.
2. **PROTECT YOURSELF**
    - Once an individual has determined that the spill is not life threatening and is manageable, protect the clean up team by properly outfitting them in Personal Protective Equipment (PPE). This includes goggles or face shield, gloves, gowns

and N95 respirators.

3. **STOP THE SPILL**
    - Stop the spill at its source.
4. **CONTAIN THE SPILL**
    - Limit the spread of the spill by properly containing the liquid. This can be done by gently pouring sand around the spill and the absorbent kitty litter onto the spill. The object of this is to prevent the spill from spreading.
5. **MINIMIZE THE RISK**
    - Neutralize the spill if necessary. Use baking soda (sodium bicarbonate) to neutralize an acid. The neutralizer needs to be mixed well with the sand and the kitty litter.
6. **CLEAN UP THE SPILL**
    - Use a plastic dustpan and plastic broom to sweep up the now solid mass and place it into a large, heavy duty garbage bag for disposal. Dispose of contaminated materials properly.
7. **DECONTAMINATE**
    - Cleaning a spill means properly cleaning both the clean up crew and their equipment afterwards. Remove and dispose of used PPE the same manner as your spilled liquid.

MAINTENANCE AND REPAIRS

For medical imaging equipment, please refer to Clinical P&P Binder under appropriate modality

GENERAL HOUSEKEEPING

Refer to Office Procedures section of Operational P&P Binder

R.I.S. & P.A.C.S. MANUAL

Reviewed July 2024
Reviewed June 2023
Revised April 2022
Reviewed March 2021
Reviewed December 2020
Revised March 2019
Revised February 2018
Reviewed December 2015
Established 2009

R.I.S. & P.A.C.S. MANUAL

RIS /PACS INFORMATION

The R.I.S. (Radiology information System) used at True North Imaging is:

- **MediExpress RIS**

The P.A.C.S. (Picture Archiving Communications System) used at True North Imaging is:

- Intelerad PACS
- Complete user's manual and PACS administrator's manual included and available at each location (additional information on final page).

True North Imaging Modalities transferred to PACS for reporting include:

- Digital X-ray
- Ultrasound
- Bone Mineral Density
- Mammography

TRUE NORTH IMAGING I.T. DEPARTMENT CONTACT INFORMATION

Main office number for ALL IT – 905-707-1777

Duane Lopes	IT Director	(C) 647-289-3598	dlopes@truenorthimaging.com
Hailab Feseha	IT Specialist	(C) 437-241-8696	hfeseha@truenorthimaging.com
Dodi Liu	Software Developer		

The IT department staff will be responsible for the installation, alterations and maintenance of all computer systems in each location. Verification of functionality and performance shall be conducted by the IT staff when first installed and after any changes or modifications are made. IT staff will also be responsible for training on any modifications or alterations.

RIS/PACS EMPLOYEE USER GUIDE

Daily/weekly system checks

Daily/Weekly system checks are not required to be performed by staff, as the PACS system is constantly being monitored by the True North Imaging IT Department and Intelerad Medical Systems. Systems are monitored for both reliability and performance.

Verbal Reports

If a verbal report is requested by a referring physician. The request should be clearly indicated on the requisition and the case will be flagged as a verbal case in our RIS by the receptionist at time of check in. The Verbal case will be marked in red on the Radiologists worklist. The radiologist will see the request on the requisition at time of reporting and contact the referring doctor directly by telephone. The technologist may also call the reporting radiologist to ensure that the reporting radiologist is aware of the verbal request. The radiologist will dictate the date and time the Verbal was given on the final report.

STAT Reports

If a STAT report is requested by a referring physician. The request should be clearly indicated on the requisition and the case will be flagged as a STAT case by the receptionist at time of check-in. The case can be flagged as a STAT at any time by technologist or Radiologist when deemed necessary. The STAT case will appear in red at the top of the Radiologists work list as priority. All STAT cases by-pass all other studies in the faxing queue as priority. Radiologists may call a verbal for STAT cases if necessary and will dictate the date and time the verbal was given on the final report.

Passwords

Staff members with a PACS User Account are required to change their password every 3 months. This user password should never be shared with anyone. Passwords should be carefully chosen so that they cannot be easily guessed/hacked. The system ensures that a reasonable length and complex password is chosen. The password ensures that only the person that knows the password has access to patient data. All access to patient data is logged and can be audited. If a password is compromised it should be changed immediately. Please contact the True North Imaging IT Department if you need help changing your PACS password.

CD not functioning

In the event that a CD ROM Drive in a workstation is not functioning, users are to contact the True North Imaging IT Department so that the affected unit can be repaired. As all True North Imaging locations have multiple workstations, the staff are to use another workstation at the clinic to burn the CD. If none of the workstations are working, then take the patient's information and offer to send a CD ROM of their study directly to their doctor. Their doctor may also have access to their study through the True North Imaging Doctor Portal or the Ontario HDIRS. The patient may also go to another True North Imaging Clinic to have their study burned to a CD ROM.

Modalities not sending to PACS

In the event that a modality is unable to send images to the PACS server. Check to make sure that the network cable is not damaged and is securely connected to the jack. Check if other Modalities are able to transfer studies. If all modalities are unable to be sent to PACS, then contact the True North Imaging IT Department. If the problem is specific to the modality and not the PACS system, then the modality vendor should be contacted also. If the performed procedure is not a STAT procedure, then the images can remain on the modality until such time that the PACS server is available. Once the PACS system is available the study can and will be uploaded to the PACS server. In the event that a problem occurs with a STAT case then a manager should be notified so that a radiologist may be dispatched to report the case directly from the modality. The patient can also be directed to a local hospital.

RIS not functioning

If the RIS is not functioning, contact the True North Imaging IT Department immediately. If the problem is local to one clinic, then another clinic can be contacted by telephone to check patients into the system. The associated paperwork can then be faxed to the clinic. Pre-printed blank worksheets can be used until the RIS problem is resolved. If the RIS is not functioning due to a network failure, then Modality Worklist not functioning and Modalities not sending to PACS also need to be followed.

Long Term storage not functioning

This should have no effect on the operation at the clinic level. The Intelerad PACS system is able to retrieve studies directly from the Clinics if the Long Term storage is not available. The only consideration is that when reporting, prior studies may not be available for comparison. If radiologists notice this occurring, they must contact the True North Imaging IT Department

Teleradiology not functioning

Most of True North Imaging studies are reported locally. In the event that teleradiology is not functioning then the Radiologist should contact the True North Imaging IT Department for a resolution to the problem. In the event that the issue cannot be resolved in a timely manner then the Radiologist would be required to report at one of True North Imaging reporting facilities. A radiologist may also contact another radiologist to report their cases until the issue is resolved.

DICOM & IHE STANDARDS

All modalities meet DICOM and Canadian IHE standards.

DICOM

All DICOM standards are found at: www.dclunie.com/dicom-status/status.html

Current, 2009 DICOM standards are composed of 16 parts including:

1. Introduction and Overview
2. Conformance
3. Information Object Definitions
4. Service Class Specifications
5. Data Structures and Encoding
6. Data Dictionary
7. Message Exchange
8. Network Communication Support for Message Exchange
9. Media Storage and File Format for Data Interchange
10. Media Storage Application Profiles
11. Media Formats and Physical Media for Data Interchange
12. Grayscale Standard Display Function
13. Security Profiles
14. Content Mapping Resource
15. Explanatory Information
16. Web Access to DICOM Persistent Objects (WADO)

***TRUE NORTH IMAGING meets DICOM standards**

IHE

Radiology IHE profiles are found at: http://www.ihe.net/Profiles/index.cfm#radiology

1. **Scheduled Workflow (SWF)** integrates ordering, scheduling, imaging acquisition, storage and viewing for Radiology exams

2. **Patient Information Reconciliation (PIR)** coordinates reconciliation of the patient record when images are acquired for unidentified (e.g. trauma), or misidentified patients.

3. **Post-Processing Workflow (PWF)** provides worklists, status and result tracking for post-acquisition tasks, such as Computer-Aided Detection or Image Processing.

4. **Reporting Workflow (RWF)** provides worklists, status and result tracking for reporting tasks, such as dictation, transcription and verification.

5. **Import Reconciliation Workflow (IRWF)** manages importing images from CDs, hardcopy, etc. and reconciling identifiers to match local values.

6. **Portable Data for Imaging (PDI)** provides reliable interchange of image data and diagnostic reports on CDs for importing, printing, or optionally, displaying in a browser.

7. **Mammography Image (MAMMO)** specifies how Mammography images and evidence objects are created, exchanged, used and displayed.

8. **Evidence Documents (ED)** specifies how data objects such as digital measurements are created, exchanged, and used.

9. **Simple Image and Numeric Report (SINR)** specifies how Diagnostic Radiology Reports (including images and numeric data) are created, exchanged, and used.

10. **Key Image Note (KIN)** lets users flag images as significant (e.g. for referring, for surgery, etc.) and add notes.

11. **Consistent Presentation of Images (CPI)** maintains consistent intensity and image transformations between different hardcopy and softcopy devices.

12. **Presentation of Grouped Procedures (PGP)** facilitates viewing and reporting on images for individual requested procedures (e.g. head, chest, abdomen) that an operator has grouped into a single scan.

13. **Image Fusion (FUS)** specifies how systems creating and registering image sets and systems displaying fused images create, exchange and use the image, registration and blended presentation objects.

14. **Cross-enterprise Document Sharing for Imaging (XDS-I)** extends XDS to share images, diagnostic reports and related information across a group of care sites.

15. **Teaching File and Clinical Trial Export (TCE)** lets user's flag images and related information for automatic routing to teaching file authoring or clinical trials management systems.

16. **Access to Radiology Information (ARI)** shares images, diagnostic reports, and related information inside a single network.

17. **Audit Trail and Node Authentication (ATNA)** Radiology Option defines Radiology-specific audit trail messages.

18. **Charge Posting (CHG)** provides timely procedure details from modalities to billing systems.

****TRUE NORTH IMAGING follows IHE standards and guidelines**

TRUE NORTH IMAGING PACS SERVICE CONTRACT

Please see attachment for the current service contract with InteleRad Corporation.

Included in the service contract:

Standard
InteleRad follows DICOM standards

Integration
InteleRad integrates MediExpress reports into PACS.

Hardware
Hardware is maintained by True North Imaging at an acceptable level of operation. Intelerad monitors the hardware and recommends upgrades when required. Hardware is retired when required and replaced with current hardware based on Intelerad recommendations. Installation of Intelerad PACS software is installed on the new hardware by Intelerad at no cost, as per contract obligations.

Archive
All images are stored in loss-less format, and are guaranteed to be archived for 7 years or as required by the Ontario Ministry of Health. There is currently no plan to remove images from the Archive. Images are currently being archived indefinitely. The cost of storage is the responsibility of True North Imaging. Storage is added as needed. Studies are also archived to tape for long term storage.

Data Back-up
All studies are archived to “mirrored” tapes. Studies are stored on the PACS system on multiple servers and multiple archives. All studies are stored on two tapes. Tapes are taken off site for long term storage.

PACS QUALITY ASSURANCE

Image Quality Verification:
All images are sent in raw, loss-less format to the local Modality Server. The modality server compresses the images to JPEG2000 Lossless format. The compressed images are forwarded to multiple off-site servers where they can be retrieved to be reported. No image manipulation is done to the images by the PACS. The images are also sent to tape for long-term off-site storage. All images are reviewed for quality by reporting Radiologists.

Images are received from the Modality at the clinic by the local modality server. There is a modality server at each clinic. The images are then transferred to an off-site modality server in a secured Co-Location Facility. The images are then stored to two additional depot servers where they will remain. Copies of the images are also sent to an archive server where they are stored and verified to two tapes that are later taken off site.

The modality servers on site at the clinics maintain a three-month cache of studies at that site. In the event of an emergency, the studies can be retrieved from the local modality server. The studies can also be retrieved from any other site from the depot servers that are housed in a high security, high availability Co-Location Facility.

PACS – SECURITY

Ontario Guidelines for Patient Privacy

True North Imaging follows:

- PHIPA (Personal Health Information Protection Act, 2004 Canada)
  http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_04p03_e.htm

- HIPA (Health Insurance Portability and Accountability Act, 1996/2003 – USA)
  http://www.health.gov.sk.ca/health-information-protection-act

True North Imaging Network:

True North Imaging maintains a "Private Network" that connects all facilities. There are redundant connections to every location for backup purposes. There are no connections in or out of the network unless through the central Firewall at the Co-Location facility. The network is managed and monitored by Advanced Knowledge Networks and True North Imaging IT Staff.

R.I.S. & P.A.C.S. MANUAL

The P.A.C.S. User manuals are available at each location.

The P.A.C.S. IT Support & User Manual have been created and provided by InteleRad for the IntelePACS system True North Imaging deploys.

IT Support Manual Index:

1. **How to delete/move images in PACS**
    a. Deleting images
    b. Moving images
    c. Moon viewer
    d. Workflow diagrams
2. **IntelePACS Reports**
    a. Study report status
    b. Transcription report
    c. Exams by status report
    d. Unreported exams
    e. Workflow snapshot
    f. Study report analysis
3. **Sample Reports**
4. **Administrator Guide**
    a. Managing and supporting users
    b. Managing study and order access
    c. Configuring connections
    d. Configuring IntelePACS
    e. Automating imaging distribution
    f. Managing exam workflows
    g. Validating studies
    h. Classifying studies
    i. Viewing the PACS status
    j. Distributing reports
    k. Getting help
5. **Managing and supporting users**
    a. Creating user accounts
    b. Managing user accounts
    c. Managing roles
    d. Customizing user forms
    e. Auditing user activity
6. **Managing study and order access**
    a. Choosing an access-granting method
    b. Features and tools affected by access granting
    c. Granting access by organization
    d. Granting access for a referring physician
    e. Granting access for a group of referring physicians
    f. Granting access manually
    g. Viewing and revoking access
    h. Allowing a third-party system to grant access
    i. Granting access by organizations with clinical trials

7. **Configuring Connections**
    a. Configuring workstation connections
    b. Configuring scanner connections
    c. Verifying connections
    d. Managing profiles
    e. Viewing modification history
    f. Optimizing data exchange
8. **Configuring IntelePACS**
    a. Configuring InteleViewer
    b. Integrating IntelePACS with a diagnostic imaging repository
    c. Configuring antivirus software
    d. Configuring JPEG image display
    e. Customizing the peer review template
    f. Customizing the image quality review template
    g. Configuring critical results
9. **Automating Image Distribution**
    a. Retrieving new studies
    b. Prefetching prior studies on acquisition
    c. Prefetching prior studies
10. **Workflow**
    a. Managing exam workflow
    b. Deleting dictation or transcription locks
    c. Deleting reservations
    d. Deleting transcriptionists
    e. Deleting dictations
11. **Validating Studies**
    a. Validating groups procedures
    b. Overriding studies in the validation list
    c. Deleting studies from the validation list
    d. Retrying automatic study validation
    e. Troubleshooting studies in the validation list
12. **Classifying Studies**
    a. Enabling study classification
    b. Understanding the study classifier workflow
    c. Understanding mapping rules
    d. Understanding preview tables
    e. Working with CVS files
    f. Mapping procedures
    g. Mapping keywords
    h. Mapping reading groups
    i. Mapping due-in times
13. **Viewing PACS Status**
    a. Viewing PACS statistics
    b. Checking the status of DICOM queues
    c. Viewing a report of DICOM image transfers
    d. Viewing orders on DICOM modality worklists
    e. Viewing the status of servers, processes, and applications
    f. Monitoring the status of servers

14. **Distributing Reports**
    a. Allowing report distribution management
    b. Filtering and navigating lists
    c. Managing distribution templates
    d. Managing distribution rules
    e. Managing graphics
    f. Managing value groups
    g. Auditing report distribution
15. **Getting Help**
    a. Accessing IntelePACS help
    b. Contacting the IntelePACS support centre
    c. Using live help
    d. Upgrading your PACS
    e. Using the documentation
    f. Searching the help
16. **User Privileges and Restrictions**
    a. Global privileges
    b. Image privileges
    c. Report privileges
    d. Privacy privileges
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INFECTION CONTROL
COVID-19
AND
LATEX ALLERGY PROTOCOLS

Revised February 2025
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INFECTION CONTROL

INTRODUCTION

Routine Practices:

True North Imaging is committed to the ongoing health and safety of their patients and staff. We require all staff to adhere to the following policies and procedures as it relates to infection control. We believe in the practice of "Routine Practices". In order to be safe and not discriminate, our technologists and front-line healthcare workers assume that everyone may be infectious and will conduct themselves accordingly.

Routine practices will protect our staff and patients in the event of any contact with blood, body fluids or fecal matter.

Our staff will:

- Cover cuts – open sores or cuts will be covered with a plastic bandage.
- Wash hands – hands will be washed with hot water and soap after using the washroom, eating, removing examination/vinyl gloves(Alcohol Based Hand Rub) or coming into contact with blood or any other body fluid. Intact skin is your first line of defense.
- Discard garbage – use caution when disposing of garbage containing body fluids or blood.
- Wear gloves/gowns – gloves and gowns should only be worn once and then discarded in the garbage or biohazard disposal prior to leaving the contaminated area, do not wear contaminated PPE in clean areas of the clinic.
- Clean-up – spills of blood or any other body fluid must be immediately cleaned with the provided disinfecting solutions.

Training

It is mandatory that we protect ourselves and our patients from contaminated medical equipment, probes and surfaces. In order to ensure our safety as well as our patients' safety we require that all staff complete the modules in the links provided below. This is to be done annually and copies of your certificates must be kept on site and a copy is to be sent to your immediate supervisor for their records. Ongoing education/reviews will be conducted at staff meetings.

All staff members will be given a demonstration in our process of cleaning/sterilization of medical equipment, probes and surfaces by the charge technologist at the site as part of their orientation and training upon hire. Spot checks will be conducted by the immediate supervisor at site visits to ensure that all staff are following protocols. The only staff permitted in the reprocessing area is staff that has been trained and have completed and passed the IPAC online course.

http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/infectiousDiseases/IPACCore/Pages/default.aspx

http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/InfectiousDiseases/Reprocessing/Pages/default.aspx

CLINIC LOCATION:_____ **DATE:** _____

STAFF NAME: _____

NAME OF PERSON COMPLETING THE INSPECTION: _____

TITLE: _____

IPAC protocol spot check checklist:	**Yes**	**No**	**Comments**
Probe is removed from clean bin once the exam is ready to start			
Clean bin/lid is wiped clean with LLD wipe			
Probe cover and glove are discarded properly after use			
Probe is wiped of any residual gel			
Probes are wiped with LLD wipe			
Cords and ports are wiped with LLD wipe (cord to connector)			
Hands are sanitized or washed			
Clean bins/lids are wiped with LLD after each use			
Is dirty probe is transported in dirty bin			
Is the probe rinsed under water for 1 minute			
Is the probe dry before placing in solution			
Probe is placed in HLD solution			
Dirty bin/lid is wiped with LLD wipe			
Hands are sanitized			
Probe #, time and initials are logged, and timer is set for 5 mins			
When timer goes off is the probe removed from solution			
Is the probe run under water for 1 minute			
Is probe dried with lint free cloth			
Is probe place in clean bin			
Is end time recorded and initialed			

EQUIPMENT REPROCESSING

Imaging Equipment & Non-porous work surfaces:

Patient exam tables, x-ray tubes, chairs, accessory equipment and any other surface or equipment that is used for patient exams must be cleaned on a regular basis. Surfaces coming into direct contact with the patient must be cleaned in between each patient exam and all other surfaces must be cleaned at least once per shift.

Each exam room is equipped with Sani-Cloth Plus. Sani-Cloth Plus are pre-saturated with both a cleaner and a disinfectant. These durable, nonwoven, non abrasive towelette offer a quick and easy-to-use cleaning option and are recommended for non-porous surfaces and fixtures. Staff should wear gloves when handling Sani-Cloth Plus to protect skin. Used Sani-Cloth Plus must be disposed of in the garbage.

Sani-Cloth Plus are effective and offer the following "kill" times:

Mycobacterium tuberculosis var: bovis (BCG)	3 minutes
Pseudomonas aeruginosa	3 minutes
Salmonella enteric	3 minutes
Trichophyton mentagrophytes	3 minutes
Staphylococcus aureus	3 minutes
Methicillin Resistant Staphylococcus aureus (MRSA)	2 minutes
Vancomycin Resistant Enterococcus faecalis (VRE)	2 minutes
Staphylococcus aureus with reduced susceptibility to vancomycin	2 minutes
Hepatitis B Virus (HBV)	2 minutes
Hepatitis C Virus (HCV)	2 minutes
Human Immunodeficiency Virus (HIV-1)	2 minutes
Herpes simplex virus types 1 and 2	2 minutes
Influenza A2 Virus	2 minutes

Ultrasound Probe Care:

In accordance with the Clinical Practice Parameters and Facility Standards for Diagnostic Imaging as published by the College of Physicians and Surgeons of Ontario (CPSO) and the Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices document released by the Provincial Infectious Diseases Advisory Committee (PIDAC), the following procedure must be followed.

Endocavity/translabial Probes:

1. Each probe is labeled, "High Level Disinfection"
2. All ultrasound endocavity/translabial probes or any other probes coming into contact with bodily fluids will be covered by a disposable sheath/condom during the examination.
3. During the examination, the sonographer must wear a disposable examination glove on the hand holding the ultrasound probe.
4. At the end of each examination, the disposable condom must be removed, along with the glove worn by the sonographer and placed into waste disposal. Any residual gel or debris must be wiped from the probe. The probe, cord to connector is cleaned with LLD sani-cloth

prior to removal from the exam room.

5. Probes are to be transported from the exam room to the reprocessing room in a covered bin labeled “Dirty” (bins and lids are to be cleaned with a LLD wipe after each use). Disinfecting of the probe will be done in the reprocessing room.
6. The probe must be rinsed for 1 minute under running water and dried with a lint free cloth after LLD and before HLD.

NOTE: Reprocessing Room is equipped with sink, eyewash station and PPE. Probe soaking containers are filled with Virox HLD5 high level disinfecting solution.

7. The probe must be left to soak for **5 minutes** as per manufacturer recommendations. Technologists must use a kitchen type timer to alert them of when the soaking time has been reached. Probes must not be left in the soaking solution for longer than the 5 minute soak time as this prolonged soaking time may cause damage to the probe end (crystals or membrane)
8. When the probe is removed from the solution, the sonographer will rinse the probe under running water for **1 minute**. The probe is then wiped dry with a lint free cloth and is now ready for the next patient use. Probes are then stored in a covered bin labeled “Clean” (bins and lids are to be cleaned with LLD wipes after each use)

After HLD of the transducer, the sonographer will document the reprocessing procedure with:

1. Patients ID number (accession number)
2. Civco Cup ID
3. Transducer serial number
4. Soaking time
5. Name of person who cleaned the transducer and date, time in and time out

When not in use:
probes should be stored in clean bins until they are needed for use, then transported to the exam room in the clean bin.

At the end of each shift:
The sonographer should wipe the ultrasound machine, all cords and keyboard using LLD (low level disinfectant wipes).

All other probes are cleaned by removing excess gel, then probe, cord to connector is cleaned with LLD Sani Cloth. All accessory equipment will be cleaned as per manufacturer’s guidelines.

(see attached chart for Endocavity/Translabial Reprocessing)

ENDOCAVITY/TRANSLABIAL REPROCESSING

Reprocessing must be in a separate designated area than scanning and include a sink.
Endocavity Transducers are disinfected with **PREempt™ HLD5.**

All endocavity transducers must be labeled as "HIGH LEVEL DISINFECTION"

One-time use transducer covers, and sterile gel must be used for all endocavity/translabial exams.
Sterile gel is to be used on the inside and outside of the probe cover.
Non-latex covers and gloves should be available for latex sensitive patients.

↓

Risk Assessment should be performed prior to reprocessing. An eye wash station must be available as per IPAC clinical office practice parameters.

↓

After completion of the exam, the sonographer uses gloved hand to dispose of the transducer cover and their glove. (Careful not to contaminate the transducer with the patient's secretions.)

↓

The transducer is wiped with a dry cloth/tissue to remove excess gel. The transducer and cord to connector are wiped with a LLD wipe. The transvaginal probe is disconnected from the system. This procedure is to be done in the exam room prior to taking the probe to the reprocessing room.

↓

Probes are to be transported in a "dirty bin" (bins and lids are to be wiped out with a LLD wipe after each use).

↓

The endocavity/translabial transducers must be rinsed under running water for 1 minute and dried with a lint free cloth after LLD and prior to HLD. Then it is to be soaked in an approved high level disinfectant solution as per the manufacturer's guidelines (5 minutes). Care to ensure that the integrity of the transducer is intact, so that the solution does not enter the device or connector.

↓

Once the soaking time has completed, the endocavity/translabial transducers must be thoroughly rinsed with potable water for 1 minute and wiped dry with a lint free cloth. DO NOT let air dry. Probes are to be stored in "Clean Bin" (bins and lids are to be wiped out with a LLD wipe after each use in the exam room).

↓

Perform Hand Hygiene as per Best Practices (Public Health Ontario) using ABR, reprocessing sinks are not used for hand hygiene. Probes to be transported back to exam room in the Clean Bins.

↓

Integrity of Transducers
Endocavity transducers should be examined regularly for any damage. If damage is evident, discontinue use immediately.

Non Endocavity Transducers
Transducers, cords to connectors should be wiped clean of gel with a dry wipe and then a hospital grade low level disinfectant wipe after each examination.
(Approved by manufacturer)

DO NOT use any alcohol, bleach, ammonium chloride or hydrogen peroxide on transducers.
All endocavity transducers must be cleaned according to the manufacturer's instructions.

REPROCESSING LOG SHEET

Toshiba: Probe A:
Probe B:
Probe C:

GE: Probe 1:
Probe 2:
Probe 3:

DATE	ACCESSION #	PROBE #	TIME IN	INITIALS	TIME OUT	INITIALS	CIVCO CUP ID

Staff Name								
Initials								
Signature								

****Note - all transvaginal transducers are soaked for 5 minutes in PreEmpt™ HLD5 solution, (as directed by manufacturer) directly after the procedure is completed****

HLD5 REPLACEMENT, TEMPERATURE and EFFICACY TESTING

In accordance with the manufacturer's guidelines, it must be replaced every 14 days. The soaking devices are to be emptied, cleaned with soap and water and dried every second Friday in order to replace the disinfecting solution. The potency of the solution must be tested prior to disposing the solution and after each solution change with the provided test strips. **At the beginning of each shift, the potency of the solution will be tested using the provided test strips and the temperature of the solution shall be taken (*please note that the solution should be at room temperature between 18-24° C*)**. Should the potency or the temperature not be at the appropriate level, the solution must immediately be replaced. A chart indicating the lot number of the test strip, date, temperature, result and person who tested the solution, will be completed for each solution container (template attached). Test strips at each location will be stored in the reprocessing room. **The Civco Cup must be closed when not in use and at the end of each day.**

PPE is to be worn when emptying and refilling Civco cups. (disposable gowns, gloves, goggles or mask with shield). PPE worn in the reprocessing room or anywhere in the clinic that the PPE could potentially be contaminated, must be removed and discarded before leaving the area. DO NOT WEAR CONTAMINATED PPE TO OTHER AREAS WITHIN THE CLINIC.

The date opened and expiry date **must be** clearly marked on the HLD5 bottle each time a new bottle is opened. For Virox HLD5 the expiration date does not differ from the manufacturer's expiry date once the bottle has been opened.

Test Strips:

Indicate date opened on the bottle. Test strips must be used within 6 months as per manufacturer's guidelines upon opening. Always check the date of expiry on the bottle. Lot #'s are to be recorded on the **Daily HDL5 Potency Test** log sheet. (see chart below)

Test Strip Efficacy Test:

In order to confirm the efficacy of the test strips an audit must be performed upon opening each new container of test strips. Please follow these directions upon opening a new container:

- 2 cups are to be prepared for testing:
    1. A negative control solution is created by diluting equal amounts of PREempt solution with equal amount of water
    2. A positive control solution of PREempt solution
- Submerge a test strip separately into each cup of solution for 2 seconds. If the integrity of the test strip bottle passes the following should occur:
- PREempt solution should produce a positive control strip (good) - Dark Brown
- The diluted PREempt solution should produce a negative control strip (bad) - tan or light brown

IF SO:

- Record new lot # and results on the daily reprocessing sheet for reference.

IF NOT:

- Throw out the test strips and open a new bottle, repeat the test and ensure efficacy.

HLD5 Solution:

Indicate date opened and expiry date on outside of jug. Discard any unused portion at the end of 14 days or prior to expiry date (whichever comes first).

NOTE: All endocavity probes must be identified with a label indicating that they are High Level Disinfectant probes.

Record the following:

- Patient's ID number (accession number)
- Civco Cup ID
- Transducer Identifier
- Soaking Date and Time
- Name of the Person who cleaned the transducer and date, time in and time out

↓

PreEmpt ™ HLD5 Solution change: Change either at:

- Manufacturer's suggested time: i.e., every 2 weeks
- Fails test strip testing
- Fails daily temp recommendation of 18-24° C

Solution must be discarded as per manufacturer's instructions.

↓

Testing of HLD: Record the following:

- Test strips specific to the HLD be done daily before use (record lot#)
- Test strip testing is to be done prior to disposing solution.
- Test strip testing be done after solutions change

↓

Testing of HLD: Temperature

- the temperature must be taken daily before use
- the temperature should be at room temperature 18-24° C
- should temperature not pass HLD must be disposed

Record Keeping:

All written documentation must be maintained on site for 6 years

NOTE: Prior to disposing of the solution (as per manufacturer's suggestion) a test strip test must be conducted to ensure the solution has not been contaminated and still holds its efficacy.

Month: _____ Daily HLD5 Potency Test Civco Cup # _____

HLD Lot #	Test Strip Lot #	Date	Temperature	Result	Initial	Notes
		1				
		2				
		3				
		4				
		5				
		6				
		7				
		8				
		9				
		10				
		11				
		12				
		13				
		14				
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		23				
		24				
		25				
		26				
		27				
		28				
		29				
		30				
		31				

✓ indicates that the potency of the HLD solution meets requirements
X indicates that the potency of the HLD solution did not meet requirements and was immediately changed

HLD Solution Change
PLEASE NOTE: the HLD solution in each soaking cup is changed every second Friday, regardless of the test strip results. Two staff must sign off that the correct solution was used when the HLD is changed. Test strip must be done prior to discarding the solution and after the solution change.

HLD Lot #	Test Strip Lot #	Date	Temperature	Result	Initial	Initial

Date Test Strip Bottle Opened: _____
Date Test Strip Efficacy Test Completed: _____ ✓PASS **X** FAIL

What to do if Test strip or temperature fails on daily testing:
Open a new bottle of test strips and repeat the test strip test. If it passes, discard previous test strips. If it fails, change the solution and notify your supervisor. Repeat strip test on new solution.
Indicate all changes & testing on daily log sheet: Efficacy of high- level disinfectant is monitored daily before first use with test strips. Results are logged daily.
Indicate date opened on test strip bottles. If a bottle of test strips has not been used before its expiry date and has been opened for 6 months, it must be discarded as an open bottle has a shelf life of 6 months.

NOTE: The solution in each soaking cup is changed every 14 days (every 2nd Friday) regardless of the test strip results. The disinfectant container is washed, rinsed and dried when the solution is changed. Indicate date solution changed on chart.

Prior to disposing of the solution (as per manufacturer's suggestion) a test strip test must be conducted to ensure the solution has not been contaminated and still holds its potency.

PPE (gloves, gown, mask and eye protection) must be worn for changing of solution.

ULTRASOUND GEL

1. Do not warm gel
2. Gel bottles are one time use only
3. Gel bottles are to be discarded one month after opening
4. Containers of gel should never be washed and refilled for use but should be discarded when empty
5. Date bottle when opened
6. Tip of gel bottle to be wiped with alcohol swab after each patient and recapped
7. Outside of gel bottle to be wiped with sani-cloth after each patient
8. Place gel bottle up-right after each use

Sterile Ultrasound Gel – single use packets (always verify expiry date):

1. For non-intact skin
2. All droplet or contact isolation cases
3. All transvaginal and transrectal exams
4. All infants

Lubricating Gel:
sterile gel to be used for trans. Vag – see attached

General Blanket Rule:
Date opening of any tubes, bottles etc. and watch expiry date

Ultrasound Transmission Gel (USTG) Recommendations: Referred to as "Gel"

***DO NOT WARM GEL**

****Gel Bottles are one time use only!**

IPAC Canada position statement on medical gels "Containers of gel should never be washed and refilled for use but should be discarded when empty."

Non-Sterile USTG

- Store in a clean, dry and protected area, Free of moisture and rotated when stored
- Verify expiry date
- initial bottle by opener
- Date the bottle when opened

DO NOT USE ON NON-INTACT SKIN
For non-intact skin use Single Use Sterile USTG

Discard Gel Bottle if:
1) Unused gel after one month of opening.
2) Tip of bottle comes in contact with a patient, staff, instrumentation or the Environment.
3) If integrity is compromised.

Between Patients:
Place cap on the gel bottle.
Wipe outside of gel bottle with Sani-Cloth Plus

Sterile USTG

Single Use Packets

One time use for single patient Verify Expiry date

Must be used for

All droplet or contact isolation cases

Non-Intact skin

In and out of probe cover for endocavity probe/exams

All examination performed on infants

All examinations performed on intact mucous membranes
(e.g. esophageal, gastric, rectal or vaginal)

Once a sterile gel package has been opened it must be discarded immediately after use.

DISPOSABLE CHART

Dispose in Regular Garbage	***Dispose in Stericycle (yellow bags)***
Gloves, Condoms	*Catheters*
Sanitary pads and tampons	*Speculums*
Underpads	*Blood, blood products, bloody body fluids*
Personal Protective Equipment (Gloves, masks, gowns)	
Empty Specimen Containers (saline)	
Clinical Office Waste	
Waste from washrooms, kitchens and public areas	
Saline syringes – 3cc and 20 cc	

SINGLE USE ITEMS

All single use items are to be discarded once used. These items are not to be used if packets or packaging has been disturbed. The items listed are single use items:

- Sterile gel packets
- Catheters (5fr, Cooke and Cannulas)
- Dilators
- Ultrasound gel bottles
- Syringes
- Speculums
- All table paper, exam drapes, paper towels, disinfectant wipes etc.…
- Condoms, probe covers
- Alcohol wipes
- hand sanitizer bottles
- hand soap bottles
- hand sanitizer bottles

NOTE: Any product that is opened for a one-time use is to be discarded after use.

AT RISK PATIENTS & RESPIRATORY INFECTIONS

In the event of a respiratory outbreak, the practices of True North Imaging regarding infection control are to identify at the front desk any patients who have any possibility of transmission of infection. Front desk staff has been instructed to ask patients the following questions when booking appointments by phone:

a. Do you have a new/worse cough or shortness of breath?
b. Are you feeling feverish?
c. Do you have a temperature?

Patients answering yes to any of the questions asked are instructed to make an appointment with their physician. Once the symptoms are resolved an appointment for their diagnostic exam will be made. Signs will be posted at the entrance of True North Imaging clinics and at the reception area. Staff will do the following for patients indicating any of the symptoms:

1. Patients will be asked to wear a mask to cover their mouth and nose.
2. The patients will be provided with tissues and waste containers.
3. Patients will be asked to sanitize hands with alcohol-based sanitizer. The sanitizer will be made readily available to both staff and patients.
4. Patients will be asked to keep to the designated area of the waiting room. The designated area will be defined by one metre from other patients, when possible.
5. Have pediatric patients refrain from playing with office toys, if any.

True North Imaging staff is to follow these steps when handling a patient with suspected infectious symptoms (i.e. SARS or other suspected respiratory infections):

1. All staff must wear protective masks/N95 masks and goggles.
2. All staff must be properly gloved and gowned.
3. All work areas must be properly sterilized, once the patient is removed from such areas.
4. Direct patient to confined area. Away from other patients.
5. Contact Public Health of your suspicions.
6. Public Health will instruct you.

Should a patient be identified as having a communicable disease (HIV, Hepatitis, etc.), every effort should be made to schedule this patient during a time period in which ample time is allowed following the exam to disinfect and properly clean all surfaces found within the exam room used. Staff, when managing these patients, will exercise routine practices and wear personal protective equipment.

HAND HYGIENE

The 4 Moments for Hand Hygiene in All Health Care Settings:

1. **BEFORE** initial patient/patient environment contact
2. **BEFORE** aseptic procedure
3. **AFTER** body fluid exposure risk
4. **AFTER** patient/patient environment contact

· **BEFORE initial patient*/patient environment contact:** Clean your hands when entering the room or cubicle and before touching the patient or any object or furniture in the patient's environment. This protects the patient and his/her environment from microorganisms carried on your hands from the hospital care environment (e.g., nursing station), other patients/environments, or from yourself. Examples include shaking hands, stroking an arm, helping a patient to move around or get washed, giving a massage, taking pulse/blood pressure, abdominal palpation, before adjusting an intravenous rate.

· **BEFORE aseptic procedures:** Clean your hands immediately before performing any aseptic procedure and before putting on gloves. This protects the patient against microorganisms, including his/her own organisms, from entering his/her body. Examples include providing oral/dental care, giving eye drops, aspirating secretions, changing wound dressings, giving injections, inserting catheters, opening a vascular access system or a draining system, preparing medications or dressing sets.

· **AFTER body fluid exposure risk:** Clean your hands immediately after an exposure risk to body fluids and after glove removal. This protects yourself and the environment from harmful patient microorganisms. Examples include providing oral/dental care, giving eye drops, aspirating secretions, skin lesion care, changing wound dressings, drawing and manipulating any fluid sample, opening a draining system, inserting and removing endotracheal tube, clearing up urine/feces/ vomit, handling waste (bandages, napkins, incontinence pads), cleaning contaminated and visibly soiled material or areas (bathroom, medical instruments).

· **AFTER patient/patient environment contact:** Clean your hands on leaving the room/cubicle after touching the patient or any object or furniture in the patient's environment. This protects yourself, the next patient and the wider health care environment from harmful patient microorganisms. Examples include shaking hands, stroking an arm, helping a patient to move around or get washed, taking pulse/blood pressure, abdominal palpation, changing bed linen, perfusion speed adjustment, touching monitors, holding a bed rail, clearing the bedside table.

General Hand Hygiene (as per Best Practices):

- Keep nails short
- Remove watches, rings and bracelets
- Do not use artificial nails
- Avoid chipped nail varnish
- Wash wrists and forearms if they are likely to have been contaminated
- Make sure that sleeves are rolled up and do not get wet during washing

Using Soap & Water (as per Best Practices):

- Wash your hands frequently with soap and water for at least 20 seconds. In most cases antibacterial soap is not necessary for safe, effective hand hygiene.
- Remove any hand or arm jewelry you may be wearing and wet your hands with warm water. Add regular soap and rub your hands together, ensuring you have lathered all surfaces for at least 15 seconds. How long is 15 seconds? The length of time it takes to sing *Happy Birthday*.
- Wash the front and back of your hands, as well as between your fingers and under your nails.
- Rinse your hands well under warm running water, using a rubbing motion.
- Wipe and dry your hands gently with a paper towel or a clean towel. Drying them vigorously can damage the skin.

- Turn off the tap using the paper towel so that you do not re-contaminate your hands. When using a public bathroom, use the same paper towel to open the door when you leave.
- If skin dryness is a problem, use a moisturizing lotion.

If you have sensitive skin or are in a position where you must wash your hands constantly (as a healthcare worker must), you might want to use an alcohol-based hand rub instead.

Hand Hygiene as set out in Public Health Ontario, Best Practices
Using Alcohol-based Hand Rubs (see guide below):

- Apply 1 -2 pumps of product to palms of dry hands
- Rub hands together, palm to palm
- Rub in between and around fingers
- Rub back of each hand with palm of other hand
- Rub fingertips of each hand in opposite palm
- Rub each thumb clasped in opposite hand
- Rub each wrist clasped in opposites hand
- Rub hand until product is dry DO NOT USE PAPER TOWELS

A hand washing guide is posted at all sinks to assist with proper technique.

PERSONAL PROTECTIVE EQUIPMENT

Gloves, masks, gowns and eye-protection must be used where and when necessary to protect both patient and personnel. Reasonable care for infection control must be exercised for all patients.

Gloves must be worn for all examinations where there may be any infection risk or where an endocavity probe is used.

In the event of a respiratory disease outbreak (SARS, H1N1, etc.), staff will be provided with the necessary personal protective equipment.

Sequence for Donning PPE:

1. Perform Hand Hygiene
2. Put on gown
3. Put on Mask or N95 Respirator
4. Put on eye protection
5. Put on gloves

Sequence for Removal of PPE:

1. Remove gloves
2. Remove gown
3. Perform hand hygiene
4. Remove eye protection
5. Remove mask or N95 Respirator
6. Perform hand hygiene

LATEX ALLERGY PROTOCOL

All True North Imaging clinics are provided with alternate latex products such as non-latex gloves and probe covers. Latex and non-latex probe covers are to be kept in separate containers with secured labelled lids to prevent cross-contamination at all times. True North Imaging has removed all latex gloves from our facilities.

Patients:

- Technologists are to wash their hands between each scan and will wear gloves for, but not limited to, transvaginal, transrectal, breast and scrotal examinations,
- Prior to using latex condoms, the patient must be questioned regarding any possible sensitivity.
- If a patient is not certain of a latex allergy, the technician is to use a non-latex probe cover.
- If a patient indicates they are sensitive, non-latex alternatives must be used.
- When an unexpected latex reaction occurs, staff is to call 911 immediately and to contact the physician on call.
- Complete incident report

Workers:

True North Imaging encourages workers to protect themselves from latex exposure and allergy in the workplace:

- Use non-latex gloves and non-latex probe covers.
- Wash and dry hands (Alcohol- Based Hand Rub) thoroughly after each examination.
- To avoid cross contamination wash your hands (Alcohol Based Hand Rub) prior to using phones, computers, pens, etc...
- If you have a known allergy to latex, carry an emergency epinephrine auto-injector.
- If you have a known allergy to latex, wear a medical alert bracelet.
- Avoid areas where you might inhale the powder residue from latex products used by other workers.
- Follow your physician's instructions for dealing with allergic reactions to latex.

What is latex sensitivity?

There are three different types of reactions to natural rubber latex.

They are:

Irritation, delayed hypersensitivity (allergic contact dermatitis) and
immediate hypersensitivity (anaphylactic symptoms).

Irritation is classed as a non-allergic condition. For most affected persons, the irritated skin is dry and crusty, and the symptoms resolve when contact with latex ceases.

Delayed hypersensitivity presents as a chemical allergy. The skin area affected becomes dry, crusty and leathery with eruptions appearing as sores and blisters. This response occurs between six and 48 hours after contact. Repeated latex exposure causes the skin condition to

expand beyond the area of contact. Many people with delayed hypersensitivity have a history of atopy (allergy, dermatitis, or asthma).

Immediate hypersensitivity is an allergic response mediated by IgE (an antibody found in the circulation). On the skin this can present as hives that migrate beyond the point of contact with latex. Systemic allergic symptoms can include itching eyes, swelling of lips or tongue, breathlessness, dizziness, abdominal pain, nausea, hypotension, shock and, potentially, death.

These symptoms are likely to result from a massive release of histamine at a local or whole body level. This results from binding of the latex allergen to sensitized receptors and will require immediate medical attention

If you have LATEX Allergies, please notify a receptionist and the technologist performing your examination prior to the start of your exam.

DAILY DUTIES for ALL STAFF

Lysol disinfecting wipes or Clorox wipes are used to wipe all counters, light switches, door handles, exam beds, chairs, etc. at least twice daily or at any time visibly soiled. (exam beds and change rooms are wiped after each use) Staff will check off that the appropriate cleansing has been done and sign off on the check lists provided. The check lists shall be kept for six (6) years in a binder labeled Daily Cleaning Checklists for each work area.

Ultrasound Technologists:
Each responsible for their room, reprocessing room & change room

Mammography, BMD & X-ray Technologists:
Responsible for all 3 rooms

Receptions Staff:
Waiting area, Washrooms and reprocessing room

NOTE: Only staff that have completed and passed IPAC online course permitted to enter the reprocessing room.

True North Imaging Sites
Contract out all office/clinic cleaning to private cleaning companies. A copy of the cleaning contract is located at the facility.

REPROCESSING ROOM PROTOCOLS

1. All staff are responsible for wiping water off counters, whenever visible throughout the day. All containers in the reprocessing area to include test strip bottles, HDL solution and clean and dirty bins are to be wiped daily.
2. No supplies or other items are to be stored under the sink or in reprocessing room.
3. No food, drink or personal items are permitted in the reprocessing room/area at any time.
4. The only staff permitted in the reprocessing area is staff that has been trained and have completed and passed the IPAC online course. **see below for links**
   - http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/infectiousDiseases/IPACCore/Pages/default.aspx
   - http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/InfectiousDiseases/Reprocessing/Pages/default.aspx
5. All staff must complete an online course annually and certificates are to be kept on site (clinic location) and copied to head office supervisor.

NOTE: Food, drink, or personal items are not permitted in the reprocessing area at any time.

DAILY DISINFECTION FOR TECHNOLOGISTS

Facility Name: _____ Room/Area: _____

Month: _____ **(Techs are responsible for change rooms that they use)**

Date	Counters/ Desks		Ultrasound units		Exam Bed		Chairs/ stools		Light Switches		Door Handles		Change rooms		Signature
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1															
2															
3															
4															
5															
6															
7															
8															
9															
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11															
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27															
28															
29															
30															
31															

Legend: Cleaned = √, Does Not Apply = N/A

DAILY DISINFECTION FOR RECEPTIONISTS

Facility Name: _____ Room/Area: _____

Month: _____

Date	Counters/ Desks/ Glass Dividers		Light Switches		Door Handles		Chairs		Punch Clock		Water Cooler		Wash rooms		Signature
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1															
2															
3															
4															
5															
6															
7															
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30															
31															

Legend: Cleaned = √, Does Not Apply = N/A

REPROCESSING ROOM - DAILY CLEANING LOG

Clinic Name: _____ Month/Year: _____

DATE	Daily Reprocessing Duties Signature	Counters	Bins	Sink	Civco Cups	Bottles
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
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24						
25						
26						
27						
28						
29						
30						
31						

****Please note that food, drink, or personal items are not permitted in the reprocessing area at any time****

CLEANING of BODILY FLUIDS POLICY & PROCEDURE

All staff are responsible for the cleaning of their rooms or area. If you feel the situation is beyond your scope, then please block off the area of contamination and call building maintenance.

Cleaning up blood spills or bodily fluids, such as vomit, or feces may contain germs that can cause serious infections. People who clean blood and other bodily fluids should reduce the risk of infection to themselves and others by following the blood spills/vomit/feces procedures outlined below.

Procedure for Blood Spills/Vomit/Feces:

1. Wear appropriate personal protective equipment, such as disposable gloves when cleaning up a spill. If the possibility of splashing exists, protective eyewear and a gown should be worn. Eye glasses are not considered to be protective eyewear.
2. Dispose with care, any broken glass or sharps into a puncture-proof container. If available, disposal of sharps into an approved sharps container for biomedical waste is preferred.
3. Clean the spill area with a paper towel to remove most of the spill. Disinfectants cannot work properly if the surface has blood or other bodily fluids on it. Cloth towels should not be used unless they are to be thrown out.
4. Discard the paper towel soaked with the blood, vomit, feces or fluid in a plastic-lined garbage bin.
5. Care must be taken to avoid splashing or spraying during the clean-up process.
6. Clean the affected area with soap and water then disinfect with a 1:10 bleach solution for 10 minutes or an appropriate disinfectant with proven effectiveness against non-enveloped viruses (e.g. Poliovirus, Norovirus, Rotavirus, Feline Calicivirus). Refer to the manufacturer's label to ensure the disinfectant is left on the contaminated surface for the correct contact time. With bleach, this would mean the surface stays wet for at least 10 minutes. **Mixing a 1:10 Bleach Solution 100 mL bleach: 900 mL of water (1 cup of bleach: 9 cups of water). Contact time on the surface is 10 minutes.**
7. Ventilate the room well when using a bleach solution. Make sure it is not mixed with other cleaning agents.
8. Wipe the treated area with paper towels soaked in tap water. Allow the area to dry.
9. Discard contaminated paper towels, gloves and other disposable equipment in a plastic lined garbage bin. Immediately tie and place with regular trash. Take care not to contaminate other surfaces during this process. Change gloves if needed.
10. Practice hand hygiene, either with soap and water or an alcohol-based hand rub of at least 60% concentration, for 15 seconds after gloves are removed. If the hands are visibly soiled, then soap and water should be used over a hand rub.
11. If an injury occurs during the cleaning process, such as a skin puncture with a blood

contaminated sharp object, seek medical attention immediately. Any occurrence that takes place in a workplace should be reported to the occupational health and safety representative.

PRODUCT NOTICES & RECALL POLICY

Products and equipment that have been recalled by a vendor (distributor, manufacturer or supplier) or cited for a potential hazard may pose a significant health and safety risk to patients, visitors or staff.

Immediately after receipt of notification, all recalled or hazardous products and equipment will be removed and placed out of service until repaired or properly disposed of.

Copies of notifications will be distributed to members of the QA advisory committee.

Supervisors will be responsible for implementation, coordination, follow-up and documentation of this policy. All documentation will be reviewed by the QA committee. All notices of manufacturer recalls and hazard notices will be kept on file.

COVID-19 INFECTION CONTROL POLICIES & PROTOCOLS

***These policies and protocols are effective in accordance with provincial requirements.**

Reception/Waiting Area

1. Signage is posted at the entrance of the facility and at reception areas requiring **ALL** patients and any visitors to **wear a face covering/non-medical mask**, perform hand hygiene, maintain respiratory etiquette and then report to reception to self-identify while in our facility.

2. One staff member will be assigned to log all staff temperatures at time of entry into the facility. This staff person will sanitize their hands, put on appropriate PPE. They will take their own temperature first and record it on the log sheet (see pg. 26) This staff member will then take and record the temperature of all scheduled staff for the day. If a patient/employee's temperature is above 38°, patients/staff are instructed to wait 5 minutes and have their temperature taken again. If the high temperature persists, the patient/employee is instructed to go home immediately until the fever is gone.

3. We have a patient only policy in our facilities. Patients are reminded to come alone for their appointment at time of booking and upon entry into the facility. Exceptions are made for support workers and juvenile patients.

4. Upon arrival at our facility, all patients and visitors are required to wear a face covering or mask. They will be provided a mask if they do not have one. They are required to remove gloves (if worn) as they will need to sanitize their hands with ABHR (min. 70% alcohol provided) then they are to complete a screening questionnaire (see pg. 27) if they answer no to ALL questions then they are permitted into the facility. They will take their questionnaire to the reception area and the receptionist will take their temperature and record it on the questionnaire. The patient will be asked to sit at one of the vacant chairs.

If the patient answers yes or has a fever, they are asked to leave the premises and go back home and self-isolate right away. They are instructed to call Telehealth or their health care provider, to find out if they need to be tested for COVID-19.

5. Patients that wait in the waiting room are minimized by spreading out appointments, spacing out chairs (2 metres apart). If the waiting room becomes close to capacity with distancing measures in place, then patients are asked to wait outside of the facility, and they will be called in for their appointment.

6. Tissue boxes and lined hands free waste receptacle are placed throughout the facility for appropriate disposal.

VACCINATION POLICY

TNI has an obligation to protect our patients and their families, our staff and your colleagues and all of our family members. Therefore, we will be implementing a new COVID policy starting October 4, 2021. We hope that all of you understand the rationale for implementing this policy and take the responsibility of protecting yourself and others to heart.

1) Staff must be either fully vaccinated or submit to regular antigen testing for COVID-19 and demonstrate a negative result.

2) Vaccination includes any subsequent dose, booster or boosters that may be required or recommended by the provincial government and/or public health authorities.

3) All fully vaccinated staff must submit proof of vaccination to your supervisors. The proof of vaccination shall be kept confidential.

4) All staff who are not fully vaccinated, must have routine twice weekly antigen testing. At this time, we will be providing tests to all those who need it.

These twice weekly tests should be done before work on Monday and Thursday. Results must be shared with their supervisor so we can documentation for our records.

Negative Test: will allow you to come into work

Positive Test: If you have a positive test, please repeat. If the second test is also positive then please stay at home. Please let your supervisor know and book a PCR Covid Test used at the screening site. If your second test is NEGATIVE then you are ok to come to work.

5) For clinics sharing space with fertility, obstetrical or urgent care physicians, we will comply with their protocols. Meaning, if a clinical group has more stringent measures, all staff in the clinic must comply with those procedures. They will supersede TNIs protocols.

Daily Staff Temperature Readings and Visitor's Log

Clinic Name:_____ Month/Year: _____

Staff/Visitor's Name	Monday Day:	Tuesday	Wed	Thursday	Friday

Please include all visitors. I.e.: delivery people, walk-in patients etc.....

STOP COVID-19

PLEASE COMPLETE THE FOLLOWING QUESTIONNAIRE UPON REGISTRATION

Name: _____

Date: _____ **Tempature:** _____

Do you have any of the following:

Yes ☐ No ☐  Fever

Yes ☐ No ☐  Cough

Yes ☐ No ☐  Difficulty breathing

Yes ☐ No ☐  Sore throat, trouble swallowing

Yes ☐ No ☐  Runny nose

Yes ☐ No ☐  Loss of taste or smell

Yes ☐ No ☐  Not feeling well

Yes ☐ No ☐  Nausea, vomiting, diarrhea

Yes ☐ No ☐ Have you been in close contact with someone who is sick or has confirmed COVID-19 in the past 14 days?

Yes ☐ No ☐ Have you returned from travel outside Canada in the past 14 days?

If you answered YES to any of these questions due to a related COVID-19 illness, go home & self-isolate right away. Call Telehealth or your health care provider, to find out if you need a test.

SIGNATURE: _____

Screening – Staff, Patients and Visitors

1. When screening, our staff use the latest COVID-19 Patients Screening Guidance Document found on the MOH COVID-19 website. See questionnaire
2. All staff have been instructed and are aware of the symptoms of COVID-19 and self-monitoring.
3. All staff are required to stay at home, or return home from work, if symptoms develop. (i.e.: fever, cough etc.…)
4. All staff are screened daily, including temperature checks, at the beginning of the day or shift and recorded on the log sheet.
5. All staff responsible for screening have access to ABHR(alcohol based hand rub)hand sanitizer as well as all PPE required.
6. All patients are screened over the phone for symptoms of COVID-19 prior to their appointments. If a patient screens positive over the phone, their appointment is deferred, and the individual referred for testing.
7. All visitors (delivery, mail, support persons etc.…) are screened prior to entering the facility. Time in and out are recorded on the log sheet.
8. We have a PATIENT ONLY policy in place for our facilities. Although we do not allow anyone other than patients into our facility, on occasion, the patient may need accompaniment due to health issues or age (child). The support person/parent must complete the screening form and have their temperature recorded as well.
9. All True North Facilities are equipped with Plexiglas barriers at reception desks for screening purposes. For locations that are smaller, and staff cannot maintain a 2 metre distance from the patients must use Droplet and Contact Precautions; this includes all PPE: gloves, isolation gown, a surgical/procedure mask and eye protection (goggles or face shield)
10. Patients and visitors are screened, including temperature check, using the latest COVID-19 Patient Screening Guidance Document on the MOH COVID-19 website.
11. If a patient screens positive, the appointment should be deferred if possible and the patient should be referred for further assessment and testing.
12. There is a process to record/log who has entered and exited the IHF/OHP that includes all staff, patients, visitors accompanying patients and other essential visitors (e.g., courier, laboratory pick-up personnel, delivery personnel, mail delivery, suppliers).

Positive Screening:

1. A patient who screens positive for symptoms of COVID-19 over the phone is instructed to self-isolate immediately and is referred to local testing location or emergency departments. Patients with severe symptoms are directed to the emergency department.
2. If a patient screens positive for COVID-19, they are advised to defer their appointments until they receive their results and are no longer displaying symptoms.

Personal Protective Equipment (PPE):

1. Technologists/Physicians are to conduct a point of care risk assessment (PCRA) before every patient interaction to determine the level of precautions required.
2. All staff are required to take the IPAC Core and Reprocessing modules annually. These modules provide training on how to properly conduct a Point of Care Risk Assessment, proper sequence of donning and doffing PPE.
   - http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/InfectiousDiseases/IPACCore/Pages/default.aspx
   - http://www.publichealthontario.ca/en/LearningAndDevelopment/OnlineLearning/InfectiousDiseases/Reprocessing/Pages/default.aspx
3. Appropriate PPE is provided for all staff to perform the task at hand. (ultrasound,x-ray admin etc…) PPE that is provided and available at all facilities are: ABHR/hand sanitizer, gloves, isolation gowns, surgical/procedure/ N95 masks, goggles/face shields.
4. All staff are fit-tested every two years and whenever there is a change in respirator face piece or the user's physical condition, which could affect the respirator fit and seal-check.
5. Surgical/procedure masks are worn by all staff at all times for the duration of their shifts. When physical distancing cannot be maintained eye protection must be worn (ie: goggles or face shield) for the duration of their shift.
6. Technologists/Physicians that are interacting with and are within 2 meters of patients who screen negative must wear a surgical/procedure mask, eye protection, perform hand hygiene before and after contact with the patient, patient environment and after the removal of PPE.
7. All staff/patients and visitors are screened prior to entering our facility. We defer any potential positive staff/patients and visitors to the proper channels therefore we do not interact with anyone that screens positive.
8. PPE is removed and hand hygiene is performed at the exit of the examination/procedure room.

Physical Capacity/Environment

1. All facilities have sufficient space to follow physical distancing as per guidelines of maintaining at least 2 meters from other people.
2. Traffic flow for common spaces is minimized. Signage is placed throughout the facility to respect physical distancing. Markings on the floor are used in necessary areas.
3. Staff are staggered to help ensure physical distancing during lunch breaks (see pg 35-26).
4. ABHR/hand sanitizer is available throughout the facility and at point of care. Washrooms are also available for hand washing.
5. All exam rooms are equipped with tissue boxes, hands-free receptacles and ABHR/hand sanitizer.

6. Signage is posted throughout the facility to remind staff and patients the signs and symptoms of COVID-19, of the importance of hand hygiene, physical distance and respiratory etiquette.

Critical Supplies and Equipment

1. All facilities have a stable supply of PPE and other essential supplies. (ie: ABHR/hand sanitizer, liquid soap, and paper towels etc…) Supplies are ordered from our regular supplier Medical Mart. Supplies are reviewed bi-weekly and are ordered as needed.
2. All employees (HCP, admin staff, etc…) are provided with the proper PPE to perform their responsibilities to ensure workplace safety under the Occupational Health and Safety Act.

Human Resources/Occupational Health and Safety

1. Staffing requirements are kept to a minimum as patient requirements permit. Admin staff that are able to work off site are not scheduled in the facility. Ie. Transcriptionist, Radiologists etc…
2. Health Care Professionals who have traveled in the last 14 days: from outside of Canada OR from a COVID-19 affected area within or outside Ontario AND/OR have had a confirmed, unprotected exposure to a person with COVID-19 must self-quarantine for 2 weeks once they are asymptomatic. They are not permitted to return to work if they have active symptoms.
3. If a staff/patient or visitor reports that they have developed symptoms, tested positive or have come in contact with someone that has tested positive for COVID-19, they are to notify their immediate supervisor. All precautions are taken in our facility while staff/patients and visitors are on the premises and risk of transmission is low. The HCP that was in direct contact with the patient is sent home to self-isolate for 14 days from the patient's visit date. Public Health is notified and will instruct us on how to proceed. Occupational Health and Safety rep and Ministry of Labour, Training and Skills Development for occupational illnesses are also notified of the incident. The exam room in which the patient was seen is deep cleaned and not used for 48 hours.
4. Employer provides written notice within four days of being advised that a staff has an occupational illness, including an occupationally acquired infection, or if a claim has been made to the Workplace Safety and Insurance Board (WSIB) by or on behalf of, the worker with respect to an occupational illness or infection, to the: Ministry of Labour, Training and Skills Development and Joint Health and Safety Committee (or health and safety representative),
5. HCPs report to their Employee Health/Occupational Health and Safety department before returning to work.

Environmental Cleaning

1. All staff follow the IPAC best practices for environmental cleaning.

2. All surfaces, furnishings, equipment and finishes are smooth, non-porous, seamless(where possible, and cleanable.
3. All chemical products used for environmental cleaning are licensed for use in Canada, carry a DIN, labeled with an expiry date, are stored, prepared and used in accordance with the manufacturer's instructions. We do not use products that need to be diluted.
4. Chemical products are stored in a manner that reduces the risk of contamination.
5. Contact time for surfaces are adhered to. Please see page 2 for time requirements.
6. Staff clean/disinfect surfaces twice a day and more often when visibly soiled. All surfaces/common areas are indicated on our log sheets including Plexiglass barriers. True North Imaging contracts out all office/clinic cleaning to private cleaning companies. As this manual is not site specific, a copy of the cleaning contract is attached for each facility.
7. In multi-unit buildings (e.g., mixed use office/medical buildings), we have engaged with landlords/building managers to ensure that the building is following best practices of cleaning in common spaces (e.g., elevators).
8. All common areas are regularly cleaned and disinfected (e.g., minimum daily).
9. After every patient visit, shared patient equipment is cleaned and disinfected before use on another patient as set out in this section of the Policy & Procedures manual.
10. All barriers are covered and changed between patients. Table paper is used to cover exam beds and replaced for each patient. The exam room and surfaces that are used by the patient are cleaned and disinfected between patients.
11. Plexiglas barriers are included in routine cleaning (e.g. minimum daily) using a cleaning product that will not affect the integrity or function of the barrier.
12. Reprocessing room Policy and Procedures are available and cleaning log sheets.
13. Patient gowns are laundered outside of our facilities by Canadian Linen.
14. All non-essential items have been removed from patient care and common areas (i.e.: magazines, brochures, toys etc.…)
15. Waste is disposed of in accordance with provincial regulations and local bylaws, with attention to sharps and biomedical waste. See disposal chart.

Reprocessing of Reusable Medical Equipment/Devices

1. All non-critical items (ie: exambeds(surface top/sides, stirrups, handrails) ultrasound machine, mammo paddles, chairs etc…) are cleaned and a low-level disinfectant(CAVI-Wipes/ SaniClothes) is used between patients. Contact surface time is adhered to.
2. Semi Critical medical equipment (endocavity probes) are cleaned and disinfected with Pre-Empt Virox HLD5 disinfectant. See cleaning flow chart.
3. Single use equipment are listed in the manual and are discarded as per Disposable Chart provided.
4. No critical medical equipment is used in our facilities.

LUNCHROOM PROTOCOLS DURING COVID

We know that this is a difficult time, and we need the support of our work friends, but we need to keep you and patients safe at all times. It is important that each staff member follow the steps below:

1. Please do not gather in exam rooms with your colleagues to eat your lunch
2. Please do not eat at your desks
3. The size of the table and/or the size of the lunchroom will determine the number of staff that can sit at the table, as long as a 2-metre distance can be maintained at all times. In most lunchrooms this should allow for 2-3 staff members at a time.
4. A safe distance must be maintained when eating lunch and it is preferable to eat lunch outside or in your car when the lunchroom is not available.
5. Face shields or goggles must be worn if a 2-metre distance cannot be maintained
6. Please wipe the table with a Lysol/Clorox wipe once you finish eating your food
7. Please be courteous, and wait your turn. Ask your colleague to notify you once they finish and you may return to the kitchen at that time.
8. No more than 2 people in the kitchen area (microwave, sink etc…) at a time **(masks must be worn)**
9. Please wipe the counter with a Lysol/Clorox wipe once you finish warming up your food and/or making your coffee etc…
10. Attached is a sign-up sheet for the lunchroom. Please place your name for the day and time that you choose to eat your lunch.
11. Please stagger lunches when possible
12. Please book the lunchroom for 15 mins at a time to allow your colleagues the opportunity to use the lunchroom as well. i.e.: 12:00-12:15, 12:15-12:12:30 etc.…
13. Please use your judgment and be respectful of your colleagues and not sign up for an entire week at a time. Please allow other staff the opportunity to use the lunchroom as well.

HEATING, VENTILATION & AIR CONDITIONING (HVAC)

1. Facilities have an HVAC system that is monitored by IHF/OHP staff or building management.
2. Ventilation meets the requirements of CAN/CSA-Z317.2 for HVAC requirements.
3. As per the regulatory requirement, the mechanical ventilation system is inspected every six months to ensure it is in good condition.

STAFF SIGN-UP SHEET FOR LUNCH BREAKS

	MON	TUE	WED	THUR	FRIDAY
11:30					
11:30					
11:45					
11:45					
12:00					
12:00					
12:15					
12:15					
12:30					
12:30					
12:45					
12:45					
1:00					
1:00					
1:15					
1:15					
1:30					
1:30					

Please place it on the front door of the lunchroom.

ULTRASOUND PROTOCOLS

Revised April 2024
Updated January 2023
Revised April 2022
Updated February 2021
Updated November 2020
Revised September 2019
Revised March 2019
Revised November 2018
Revised February 2018
Revised December 2017
Revised April 2010
Reviewed July 2008
Revised January 2007
Revised August 2004
Reviewed December 2003
Revised March 21, 2002
Revised October 1999
Revised December 1998
Revised January 1998

ULTRASOUND PROTOCOLS

OPERATOR TRAINING/QUALIFICATIONS

All DMS (Diagnostic Medical Sonographers) shall either be certified by, or eligible for certification by the American Registry of Diagnostic Medical Sonographers (ARDMS) or Sonography Canada (CARDUP). All DMS and MRTs (Medical Radiation Technologists) must be registered with The College of Medical Radiation and Imaging Technologists of Ontario (CMRITO).

All DMS's performing NT studies **must** be registered with the Fetal Medicine Foundation and BORN Ontario. DMSs must provide a copy of the FMF certificate which includes their FMF # as well as their login as proof of their registration with BORN Ontario. All DMS are to login to BORN and check their curve as required. DMS that are not in good standing with BORN Ontario are to notify their immediate supervisor and discontinue performing NT studies until matters have been corrected.

All DMS/MRTs shall practice the **ALARA principle** to ensure that the total **ultrasound** energy is maintained below a level at which bioeffects are generated while diagnostic information is preserved. Implementation of **ALARA** enables obtaining the information needed while keeping the potential for bioeffects as low as reasonably achievable.

If there is any doubt as to the reason for the examination or concern regarding the requisition, the technologist must discuss the concern directly with the referring physician or health care professional who ordered the exam. Document the concern and steps taken to resolve the situation, who you spoke to and final resolution on the requisition.

ALARA and Prudent Use at TNI

ALARA, As Low As Reasonably Achievable is a generic stance regarding radiation exposure, the goal of which is the least and lowest exposure possible and/or practicable, vis-à-vis licensed use of radioactive materials, the economics of improving nonradioactive technologies, the benefits to public health and safety, and other socioeconomic considerations.; The free dictionary.com

At TNI, the ALARA principle is applied at ALL examinations,

The potential benefits and risks of each examination is considered.

ALARA is observed when adjusting controls that affect the acoustic output and by considering both the transducer dwell time and overall scanning time for Sound Energy procedures (Diagnostic Ultrasound) as well as radiation and dose reduction for radiation related procedures (X-Ray, Bone Mineral Density &Mammography).

Ultrasound

Prudent use: Ultrasound should be used only by qualified health professionals to provide medical benefit to the patient. Ultrasound exposures during examinations should be as low as reasonably achievable **(ALARA).** American Institute of Ultrasound in Medicine. Official Statements: As Low As Reasonably Achievable (ALARA) Principle. American Institute of Ultrasound in Medicine website. Reapproved May 19, 2020

Whenever possible, the application of sound waves should be limited to:

- Booking patients for all examinations on the same day to ensure decreased exposure to sound waves.
- Minimize the overall scanning time to that needed to obtain the required diagnostic information.
- Apply correct examination presets if built into the diagnostic ultrasound device. The review of manufacturer default presets for appropriateness is encouraged.
- Adjust the power to the lowest available setting that provides diagnostic quality images. If appropriate, reduce power at the end of each examination so the next user will start with the lowest acoustic output setting.
- Decrease use of color and pulsed wave doppler whenever possible for both General and obstetrical Imaging.
- Monitor the mechanical index (MI) and thermal index (TI). Know the recommended upper limit for the MI, TI, and related duration limitations for the examination being performed.

Typical Outputs from US units at TNI (CANON)

		MI	TIBm	TISm
OB	B-Mode	1.6		
	Colour	1.6	0.5	0.5
	PW Doppler	0.9	3.5	0.8
OB NT	B-Mode	1.7	0.4	0.4
	Colour	1.5	0.7	0.7
	PW Doppler	0.9	3.4	1
Abdo	B-Mode	1.6		
	Colour	1.6	0.5	0.5
	PW Doppler	1.4	3.4	0.8
Gyn	B-Mode	1.6	0.4	0.4
	Colour	1.6	0.5	0.5
	PW Doppler	1.7	2.5	0.6
Breast	B-Mode	1.7	0.4	0.4
	Colour	1.7	0.8	0.8
	PW Doppler	1.7	1.8	0.5
MSK	B-Mode	1.7	0.5	0.5
	Colour	1.7	0.8	0.8
	PW Doppler	0.9	1.8	0.4
Carotid	B-Mode	1.7	0.4	0.4
	Colour	1.7	0.6	0.6
	PW Doppler	1.4	1.9	0.5

Revised 24/03/2025

Typical Outputs from US units at TNI (GE)

		MI	TIBm	TISm
OB 1st Trim	B-Mode	0.8	<0.1	<0.1
	Colour	0.8	0.5	0.5
	PW Doppler	0.7	1.3	0.4
OB Routine	B-Mode	0.9	<0.1	<0.1
	Colour	0.9	0.5	0.5
	PW Doppler	0.3	1.3	0.4
Abdo	B-Mode	1.1	0.1	0.1
	Colour	1.1	0.7	0.7
	PW Doppler	0.3	2.9	1.3
Gyn	B-Mode	1	<0.1	<0.1
	Colour	1	0.9	0.9
	PW Dopper	0.4	1.8	0.6
Breast	B-Mode	0.7	<0.1	<0.1
	Colour	0.7	0.8	0.8
	PW Doppler	0.5	1.3	0.6
MSK	B-Mode	0.5	<0.1	<0.1
	Colour	1	1.2	1.2
	PW Doppler	0.3	1.2	0.7
Carotid	B-Mode	1.1	<0.1	<0.1
	Colour	1.1	1.1	1.1
	PW Doppler	0.3	1.2	0.7

Revised 24/3/2025

For GE Voluson S8, it can be found in position 7 and 8. GE systems are software limited to never pass regulatory standards.

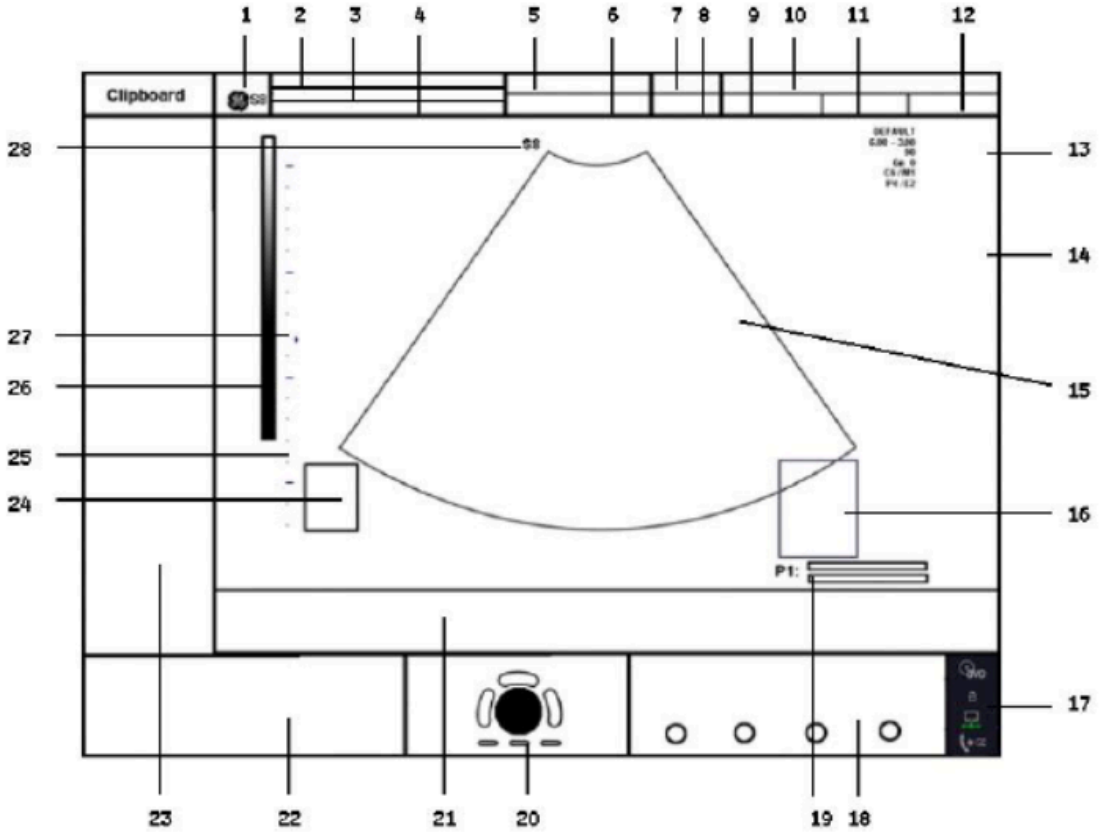


Figure 4-8 Monitor Display Tour

Table 4-2 Monitor Display Features

1. Logo	15. Image area
2. Patient Name (Last-, First-, Middle Name)	16. Measurement results
3. Patient ID-number ; GA (Gestational Age)	17. Status bar area
4. 2nd Patient ID-number	18. P buttons
5. Probe / Application	19. Cine
6. Depth / Frame rate	20. TrackballCine
7. Mechanical Index	21. Current Clipboard
8. Thermal Index	22. Rotary button and Paddle Key
9. Sonographers Name	23. On Screen Menu
10. Hospital Name (Identification)	24. Body marker
11. Date	25. Depth scale markers
12. Time	26. Gray scale wedge
13. Image Info	27. Focal zones marker
14. TGC curve	28. Orientation marker

The AIUM official statement (recommended maximum scanning times for displayed thermal index values), when TI is less than 0.7, there is no maximum scanning time limit.

No reference has been given by the AIUM for MI

Resources:

Universal Medical Inc.

AIUM **Revised 24/03/2025**

If there is any doubt or concern as to the reason for the examination:
If there is any doubt as to the reason for the examination or concern regarding the requisition, the technologist must discuss the concern directly with the referring physician or health care professional who ordered the exam. Document the concern and steps taken to resolve the situation, who you spoke to and final resolution on the requisition.

*Imaging Physician***:**
The ultrasound imaging physician shall be:

- A licensed Ontario physician certified by the Royal College of Physicians & Surgeons of Canada as a specialist in Radiology who has a minimum of three months of training in ultrasound at an approved institution.

OR

- A licensed Ontario physician with a Royal College Specialist Certificate in a field other than Radiology, who also has a minimum of six months of training in ultrasound at an accredited institution.

OR

- A licensed Ontario physician certified by the College of Family Physicians of Canada with a minimum of 12 months of training in ultrasound at an accredited institution.

IMAGE DOCUMENTATION

All points of protocol **including area of examination** must be documented on images and sent to PACS. Images sent to PACS are archived and as per recommended guidelines.

INFECTION CONTROL & GLOVING PROTOCOL

Reasonable care for infection control must be exercised with all patients. The technologist should wash their hands between each scan (running water or hand sanitizer) and will wear non-latex gloves for, but not limited to, transvaginal, transrectal, and scrotal examinations. In addition, gloves must be worn for any examination that the technologist feels may be an infection risk. All gloves and condoms used for endocavity procedures are to be disposed of in the waste receptacle. If a technologist has an open wound on a scanning hand he/she **must** wear gloves.

Endocavity/translabial probes must be prepared and cleaned according to the protocol. All other probes must be wiped clean at the end of each scan, and where there is a risk of infection, a hospital grade LLD wipe is to be used.

NOTE: Prior to using latex condoms, the patient must be questioned regarding possible sensitivity. If a patient indicates they are sensitive, non-latex alternatives must be used**.**

CONTACTING RADIOLOGISTS

If the referring physician needs an immediate report, or if, during the course of an examination, the technologist requires the input of a radiologist, technologists are to contact the reporting radiologist. If the reporting radiologist is unavailable, the technologist should contact the head office and speak with another radiologist. Three (3) attempts, via head office, at 5-minute intervals must be made. If this fails the Medical Director (Dr. Alex Hartman) is to be called. His cellphone number is listed in each ultrasound facility.

The reporting radiologist must be contacted for any urgent matter including but not limited to:

- Ectopic Pregnancy
- Incompetent Cervix
- Biophysical Profile (Score <8/8)
- Abnormal Doppler or growth in pregnancy
- Ovarian torsion
- Testicular torsion
- Acute appendicitis/Acute diverticulitis
- Acute cholecystitis
- Ruptured AAA/Aortic dissection
- Abscess
- Unexplained inflammation in the neck
- Patient very unwell/unstable during/after the examination

In the event that either the referring physician requests the exam to specifically rule out one of these entities or that the technologist suspects one of these entities on his or her exam the following should be done:

If no positive findings are found, review the case with the reporting radiologist before letting the patient go. (The patient has to wait in the clinic until this has been done).

- The radiologist will then call the referring physician and give a verbal report on the specific problem. At that time, it is expected that the referring physician will make a decision as to how to deal with the patient.
- After the referring physician has been contacted, the radiologist will then call back to the clinic and speak to the technologist, indicating that the verbal report has been given and the referring physician wishes the patient to either go home or go to his /her office as the case may be.

NO PATIENT IS TO BE EXAMINED WITHOUT A REQUISITION

Ask the patient if he/she was given a requisition for the examination. The requisition is a "source document" which must accompany the file of all patients examined at the clinic. It must be filled out and signed by the referring doctor and must be scanned into PACS and kept for a minimum of six years**. A complete requisition must include patient's name, and 1 other identifying factor (i.e. DOB or HC#), type of examination, and referring physician's signature.**

If the patient does not have a requisition, then you must call the referring doctor's office and obtain the necessary information and authorization, fill out and sign a new requisition on behalf of the referring doctor. If this is not possible, then the technologist should question the patient and determine the reason for the referral, consult with the Quality Advisor, and fill in a

requisition on behalf of the referring physician and initial it pending authorization by Doctor. The case is to be held until confirmation of the requisition is obtained. If authorization is not granted, the billing for that study must be canceled but study must be reported.

No additional examinations will be performed unless verified by the referring physician or the reporting radiologist.

If there is any doubt as to why the patient has been sent to the clinic, the referring physician must be contacted.

In accordance with the Health Care Consent Act, after an appropriate explanation of the procedure, a verbal consent must be received. Verbal consent may be expressed by a statement or implied by the patient's conduct. For children and incompetent adults, authorization from a parent or other responsible person (i.e. referring physician) should be obtained. Should the patient refuse or terminate the exam. The sonographer must stop and document this on the technical impressions report for the Radiologist. The Radiologist will dictate this in their report to the referring physician. The complete study that is requested by the physician (unless you call the referring MD to change the order) must be done. If a full abdominal requested, do not just do a limited abdomen or change it to an extremity ultrasound.

No procedure is to be undertaken without the patient's consent or the consent of his/her parent or representative.

For all procedures involving injected contrast media a signed consent form must be attached to the patient's file.

For all breast ultrasounds and endocavity ultrasounds, when performed by the opposite sex, a signed consent form must be attached to the patient's file.

Taking photographs and videotaping by the patient and/or patients' family while in the examination room is strictly prohibited at all True North Imaging clinics.

Each clinic must have a complete set of examination protocols for all ultrasound examinations.

ULTRASOUND PROTOCOL GUIDELINES

The Ultrasound Guidelines are the **minimal** standard of images to be taken per case.

Previous:

a. Always check for previous relevant studies, including US, CT, MR, Nuclear Medicine and Mammography. Check our system and always ask the patient.
b. Write date of the comparison study on the tech sheet.
c. For previous ultrasound, must look at images to ensure following the same lesion (or read outside axillary report if available)
d. Follow lesions carefully and, if you do not see the lesion previously mentioned on the report, please indicate this to the Radiologist, as well as image the area of concern. Take specific images of the area where the lesion was present previously.

Should you find a discrepancy in the previous report, please bring it to the attention of the radiologist. The radiologist will issue an addendum report if the previous was done in house. If it is an outside previous, the radiologist will contact the facility that it was performed at and inform them of the discrepancy.

Clinical History:

a. Read requisition and ask patients. We need to answer clinical questions.
b. For Obstetrical Exams, always confirm EDC at each exam.
c. For palpable masses please provide a complete clinical history.
   This includes:
   1. location of the mass including diagram
   2. How long the mass has been present
   3. Any change in size of the mass; increase/decrease
   4. Presence of pain
   5. Associated symptoms, fever, discharge, etc.

Measurements:

All lesions need to be measured in 3 dimensions.

a. Documentation should be universal: **Sagittal x Width X AP dimensions**
   (Transverse image should be used for both Width and AP measurements)
   Universal measurements: **Centimeters (*except* NT, nuchal fold and AFI)**
b. Images should be taken without measurements first so we can see the lesion characteristics and then with the measurements. Measure each lesion separately.
c. On the technologist sheet, write down today's measurements and then previous measurements in brackets.
d. All pathology (even normal variants) should be documented on images. For multiple lesions, draw location on a diagram and number the lesions on the diagram and on images.
e. If there are multiple lesions, please measure representative marker lesions to ensure the same lesion will be followed on subsequent exams. i.e.: in liver, thyroid, uterus etc. For all pediatric patients, after writing measurements, give a normal range for the patient's age (from suggested limits of normal column) in brackets for liver, spleen and kidneys. (See chart). For thyroid lesions- document the 3 nodules in each lobe with the highest Ti-rads score. For ovarian lesions, each lesion gets its own O-rads score.

Masses: Please identify location within the soft tissues (skin, subcutaneous tissue, intramuscular) and use colour/power Doppler to assess vascularity. Ensure you provide a complete clinical history. Clearly describe the location of liver lesions in relationship to the lobe, hepatic veins, portal veins or gallbladder.

Findings: **Clearly write down all relevant findings**. Please check that you do not leave any part of the worksheet empty. Please do not write NES or SOV, state what you could and could not see. Please use the terms "negative study" or unremarkable". **All clinically relevant information must be thoroughly documented on the technologist's worksheet, including but not limited to, clinical information, the area being examined, accurate measurements and exam findings.**

Cysts: Please categorize the cyst as simple or complex regardless of location in the body *and* describe the findings (thick septum, vascularity, solid component, calcifications). For Ovarian lesions use O-rads descriptors and Thyroid nodules use Ti-Rads descriptors.

Fibroids: Clearly describe the location of fibroid as submucosal/ subserosal/intramural or pedunculated *and* their location with respect to the uterus (RT/LT/post/ant/lower uterine segment/body/ fundal)

Palpable lesions: Indicate on the images if the abnormality corresponds to the palpable lesion referred to by the physician or patient. If there is no abnormality visualized at the area of interest: please document with representative images labeled as "area of interest".

Fetal Gender - Fetal gender is only released by DMS at anatomical scan if the following: Must include image clearly demonstrating fetal gender in ALL cases.

- Once the radiologist has reviewed the case and confirmed the gender.
- If indicated on requisition by referring physician
- If the referring physician has a standing order for disclosure at the clinic

SONOGRAPHER WORKSHEET

Send an image of the OB worksheet and Fetal Growth Graph (EFW Hadlock) from the U/S machine to the PACS.

When filling out the tech sheet, please modify the template to reflect your findings i.e.: free fluid, adnexal masses (add or cross out comments as necessary).

OBSTETRICAL PATIENT REBOOKING

If you are unable to complete an exam due to poor fetal position or patient factors:
First, explain to the patient and ask her to wait in the waiting room and try to complete the exam the same day. Know your referring physician's preference for rebooking his/her patients. If in doubt, reschedule patients before they leave.

If a patient is unable to wait or if the fetus is still not in a good position, try rebooking the patient within 1 week for a limited OB scan. Write the date and time the patient is to return on your tech worksheet and send the case through for reporting as per usual.
Look at ***only*** the cervix and the anatomy you were not able to see previously (document fetal cardiac activity).

However, if previous abnormal findings are on initial scan, please reevaluate the area of concern. It is your responsibility to ensure the patient is squeezed in when you are available to finish the exam. **Do not re-book into an open 30 min. space.** Use your judgment and book patient between two (2) pelvic or small part exams.

NOTE: It is clinic policy that all OB exams rebooked outside a two (2) week period require a complete scan including measurements.

ULTRASOUND PROCEDURES – Delegated Acts

Do Complete Procedures – Solve the Clinical Problem

It is our goal to provide the best possible care to our patients and referring doctors. They trust us to perform the most appropriate test(s) on all of our patients. Referrers aren't always diligent in providing necessary clinical information or indicating on the requisition the type of procedures that they want done. Often, they just send the patient to us, sometimes without even indicating the clinical problem. Our job is to solve the clinical question that confronts us by using established protocols to guide our investigations. This allows us to ensure that the most appropriate procedures are being performed and that consistency is maintained, so that expectations are met.

In medicine, there are various conditions, whose presence alerts us to other, sometimes more serious conditions, elsewhere in the body.

Below are lists of scenarios of when it is appropriate to add on specific studies.

1) **Add Renal Ultrasound to Pelvic Exams, when:**
    - Enlarged myomatous uterus/large pelvic mass.
    - Endometriosis history or endometrioma on exam.
    - Pelvic inflammatory disease or pelvic adhesions on exam.
    - Uterine malformation.
    - Unexplained scrotal/pelvic pain or lower quadrant pain.

2) **Add limited Pelvic to look for free fluid in Abdominal studies, when:**
    - Query ascites
    - Trauma

3) **Add limited Abdominal to look for free fluid in Pelvic studies, when:**
    - Query ectopic pregnancy/pregnancy of unknown location
    - Complicated free fluid in pelvis.

4) **RLQ Pain +/- query appendicitis assessment must include**
    - Right Kidney
    - Gallbladder + CBD
    - Right ovary (either transabdominal or transvaginal, if bladder is empty)
    - Look for appendicitis (and mesenteric adenitis in kids)

5) **Add Renal/Bladder for history of hematuria**
    - Entire Genito-urinary tract needs to be assessed
    - Bladder must be full (at least 300 ml)

6) **For female patients that present with axillary symptoms/concerns**
    - Add bilateral breast and bilateral axilla

I have read and understand that this is a delegated act that I have been approved to perform.

_____ _____

Sonographer

Dr. Alex Hartman, MD, FRCP (C)
Quality Advisor/Medical Director
True North Imaging

True North Imaging
Delegation of Act
Transvaginal Ultrasound Examinations

Facility Name: _____

Sonographer: _____

Radiologist: Dr. Alex Hartman

1. Transvaginal scanning requires the insertion of the appropriate transducer into the patient's vagina. Insertion is usually done by the sonographer.

2. Patient preparation and procedure are outlined in the ultrasound policy & procedure manual.
    - Transvaginal ultrasound allows closer visualization of the pelvic structures through the use of a probe which is inserted into the vagina.

3. The sonographer is responsible for explaining the examination, in detail, to the patient. The patient must understand, from the explanation, that this is an internal examination requiring the ultrasound probe to be inserted into the vagina.
    - The probe is only inserted a small distance and should not be uncomfortable or painful but may feel a little cold.

4. It is the patient's decision to proceed with the transvaginal examination. Please verify consent. i.e. Do you wish to have the examination? Written consent is not required at this time.

5. All sonographers will undergo training specific to this examination under the supervision of a senior sonographer and Radiologist until competency is achieved. Until such time that this training is complete, the sonographer is not able to perform this examination unsupervised.

6. Current CMRITO registration is required.

I have read and understand that this is a delegated act that I have been approved to perform.

_____
Sonographer

I confirm that the above-named sonographer has received the required training and I am delegating this act to this sonographer.

_____Radiologist

True North Imaging
Delegation of Act
Transrectal Ultrasound Examinations

Facility Name: _____

Sonographer: _____

Radiologist: Dr. Alex Hartman

1. Transrectal ultrasound requires the insertion of the appropriate transducer into the patient's rectum. Insertion is usually done by the sonographer.

2. Patient preparation and procedure are outlined in the ultrasound policy & procedure manual.
    - An endorectal diagnostic ultrasound examination allows the ultrasound transducer (probe) to be placed internally in close proximity to the pelvic organs and is performed to obtain further diagnostic information concerning the prostate gland and surrounding regions.

3. The sonographer is responsible for explaining the examination, in detail, to the patient. The patient must understand, from the explanation, that this is an internal examination requiring the ultrasound probe to be inserted into the rectum. Written consent is not required at this time.

4. It is the patient's decision to proceed with the transrectal; examination. Please verify consent. i.e. Do you wish to have the examination? Written consent is required. Please use the consent form on page 169.

7. All sonographers will undergo training specific to this examination under the supervision of a senior sonographer and Radiologist until competency is achieved. Until such time that this training is complete, the sonographer is not able to perform this examination unsupervised.

8. Current CMRITO registration is required.

I have read and understand that this is a delegated act that I have been approved to perform.

_____
Sonographer

I confirm that the above-named sonographer has received the required training and I am delegating this act to this sonographer.

_____
Radiologist

ABDOMINAL ROUTINES

NOTE: All organs shall be scanned sagittal or in their long axis from side to side and beyond, as well as transversely or in their short axis from top to bottom and beyond.

1. With the patient in a supine position scan in a sagittal plane over the aorta, making sure that the gains are adequately adjusted to allow visualization of the walls of the abdominal aorta and an echo free aortic lumen. If you are unable to see the aortic bifurcation, the patient may be placed in an RLD or an LLD position.
   a. The abdominal aorta must be shown from the diaphragm to the bifurcation. The proximal common iliac arteries must be included. Note should be made of the following vessels: celiac axis, the superior mesenteric artery and the inferior mesenteric artery.
   b. Follow the same procedure in the transverse plane. The proximal iliac arteries must be included. Note should be made of the celiac axis (including splenic and hepatic branches), and the right and left renal arteries.

Note should be made of the size of the vessel **(measure maximum transaxial dimension - outer edge to outer edge to include wall**), its pulsatility, and the presence of plaque or Para-aortic lymph nodes. Document origin of renal arteries in the presence of an aortic aneurysm.

2. Scan the IVC in a Sagittal plane noting a change in the caliber of the vessel with inspiration and expiration.

3. Scan the pancreas in a transverse plane (supine and upright position if necessary) - the gains should be adjusted to demonstrate the echogenicity of the pancreas as compared with the liver. Be sure to include the uncinate process, head, body and tail of pancreas in your scans. Look for the GDA, CBD and pancreatic duct.

   a. Scan the pancreas in the sagittal plane – from the great vessels scan laterally to view the neck, head, uncinate process, and back through midline to visualize the body and tail.

NOTE: If the pancreas is not visualized at this time, re-scan it with the patient in another position at the end of the exam (erect or decubitus) or following the patient drinking a glass of water.

4. Scan the spleen in sagittal and transverse. Sweep through the entire organ, and beyond. Note any abnormalities. Measure the length of the spleen. The patient can be done supine or in a right lateral decubitus position. Look for the tail of the pancreas, the costophrenic angle (for pleural effusion) and the adrenal space.

5. Slowly scan the left kidney in sagittal and transverse. Evaluate the renal sinus and cortex. Sweep through the entire organ, and beyond, looking for any abnormalities.
   a. Take a longitudinal measurement on the sagittal scan; transverse and AP measurements of the kidney, on the transverse scan.

6. Slowly scan the right kidney in sagittal and transverse. Evaluate the renal sinus and cortex. Sweep through the entire organ, and beyond, looking for any abnormalities. Look for the right adrenal space, the right costophrenic angle (for pleural effusion) and Morrison's pouch.
   a. Take a longitudinal measurement on the sagittal scan; transverse and AP measurements of the right kidney, on the transverse scan.

NOTE: If any degree of hydronephrosis is present (measure renal pelvis AP), document and calculate the patient's urinary bladder volume. Demonstrate ureteric jets in the bladder. Have the patient void (or attempt to) and do a post-void examination of both kidneys, and the urinary bladder.

7. Scan the liver in both the sagittal and transverse planes, high enough to include the diaphragm on your scans. Make sure gains are properly adjusted (at least 2 focal spots are recommended) to give the liver an evenly echogenic appearance from anterior to posterior aspects, within the organ. Include a view demonstrating the three hepatics veins with the inferior vena cava, and the portal veins at the Porta Hepatis. At least 1 image should include the liver and right kidney to compare the echogenicity. Note should also be made of the size, in a subjective evaluation (compare to right renal size). A length measurement should be taken in the Right mid clavicular plane.

8. Evaluate the CHD, the CBD and the main branches of the portal vein. If any of the ducts appear dilated, measure the lumen of the duct. Routinely measure the CBD lumen as follows: In the sagittal plane, where the right branch of the portal vein crosses the IVC, identify the duct as a tubular fluid filled structure running caudally over the portal vein. The hepatic artery may sometimes be seen in cross -section here between the duct and the P.V. (see diagram). Make sure you are not measuring the artery. If there is any doubt, trace the structure to its origin or apply colour Doppler. The artery can be traced to the aorta. The duct can be traced back to the liver.

9. Scan the gallbladder in both the sagittal and transverse planes from neck to fundus. Decrease gains as required (use as high a frequency probe as possible). The gallbladder must be scanned with the patient in the three positions. Note the thickness of the gallbladder walls. Measure the AP thickness of the wall and the gallbladder in the transverse plane. Make note in the technologist’s preliminary observation worksheet.

10. Scan the flanks and lower abdomen (into the pelvis) for any fluid or masses.

IMAGE PROTOCOL - ABDOMINAL

Pancreas:

- Transverse views: head, uncinated process, body and tail.
- Sagittal views: head with IVC and body with aorta.
- Measure pancreatic duct.

Aorta & IVC:

- Sagittal views: show entire length of aorta
- Proximal, mid and distal aorta to bifurcation.
- Transverse views: proximal, mid and distal to bifurcation.
- Sagittal view of IVC and aorta in the left lateral decubitus position.
- Measure the mid abdominal aorta in transverse view at its greatest dimensions. It is more accurate and should be used for width and AP measurements. (measure outer to outer wall not lumen)
- The width and AP dimension of an AAA must be measured in the transverse view. The scan of AAA should include images of the bifurcation and both common iliac arteries including AP measurements in the transverse plane.

Kidneys:

- Long axis view with measurement
- Transverse view: upper, mid (hilum) and lower pole.
- Pelvicaliectasis: measure AP dimension of renal pelvis in transverse view. If there is dilatation of the collecting system, try to follow the course of the ureter and check for ureteric jets in the bladder. Then recheck dilatation of the collecting system post-void.

Spleen:

- Long axis views and measure spleen. Transverse views.

Gallbladder:

- Long axis and transverse views in both the supine, left lateral and/or upright positions.
- Always look at bladder neck
- Document transverse measurements **(>4cm is abn)**
- Measure gallbladder wall thickness.
- Always measure the largest stone or polyp, if present.
- In patients with gallstones, always document sonographic Murphy's sign.
- Must demonstrate if the gallstone or sludge ball is mobile.
- Post-cholecystectomy patients with recurrent pain must follow Common Bile Duct throughout the ***entire length*** to ampulla to exclude choledocholithiasis.
- Measure bile duct proximally ***and*** at widest point (follow to pancreatic head if possible)
- Evaluate intrahepatic ducts in the periphery of the liver and in the region of the Porta Hepatis adjacent to the RT and LT branches of the portal vein.

Liver: Length must be measured in ***right mid-clavicular line***

Transverse view:

- RT lobe/lung,
- RT lobe/hepatic veins
- RT lobe/portal veins (main, right),
- RT lobe/GB/kidney
- LT lobe/hepatic veins

- LT lobe/left portal veins, include image of portal vein at confluence,
- LT lobe/caudate lobe

Long axis views:
- LT lobe/aorta
- LT lobe/caudate lobe/IVC
- RT lobe/dome (diaphragm)
- RT lobe/lung
- RT lobe/portal vein
- RT lobe/kidney

MEASURE PORTAL VEIN at PORTA HEPATIS
If lesions are found:
- Measure the largest in the left and right lobes
- Measure the smallest lesion found anywhere
- Label lesion on worksheet for follow-up exams and document the location of any lesions using segmental ***or*** lobar anatomy (describe which lobe and relationship to GP, Hepatic or Portal veins)
- Use colour Doppler to assess vascularity as per True North Imaging protocol guidelines.

Retroperitoneum:
Assess the abdominal great vessels, the pancreas, kidneys, adrenal glands/space, regional lymph nodes, retroperitoneal musculature and the potential retroperitoneal spaces long axis and transverse views

Peritoneum - Cancer patients (specifically colon and ovarian cancer):
- Scan entire abdomen with focus of transducer probe at or just below anterior abdominal wall to assess for omental seeding
- Scan just below echogenic peritoneum (should move up focal zones and will see bowel moving beneath peritoneum)
- Assess for intraperitoneal free fluid, also check pelvis.

ABDOMINAL	MEASUREMENTS: NORMAL VALUES
AORTA	→ **> 3.0 cm** = aneurysm
	→ bifurcation = 1.5cm
	→ common iliacs = ≤ 1.0cm, > 1.0cm = aneurysm
	→ SMA = three times smaller than aorta
IVC	→ varies - dependent on phases of respiration
PANCREAS	→ deep inspiration may increase size of IVC
	→ head = 2.7 +/- 0.7cm
<u>SPLEEN</u> KIDNEY	→ body = 2.2 +/- 0.7cm
	→ tail = 2.0 +/- 0.4cm
	→ pancreatic duct = < 0.3cm
	→ Up to 13cm for adults
	→ 9-12cm long
LIVER	→ cortex = 1cm (measure axial plane)
	→ approximately → 16cm transverse
	→ hepatic veins = < 1cm
	→ portal vein = 1.1cm +/- 0.2cm
GALLBLADDER	→ 8-9cm long
	→ 4cm AP
	→ wall = < 0.3cm
	→ CBD = ≤ 0.6cm
	up to 0.9cm = post cholecystectomy

EARLY PREGNANCY ROUTINE (up to 12 weeks)

1. Begin in a sagittal plane in midline. View the entire uterus from the vagina to the fundus. Make a special note of the cervix and measure cervical length. If able, measure length and AP diameter of the uterus.

2. Angle the probe to the right and left to view the ovaries and other adnexal structures.

3. In a transverse plane, view the entire uterus from the vagina to the fundus and then angle the probe to both the right and left sides to view the ovaries and adnexa. If able, measure the transverse diameter of the uterus.

4. Annotate and measure ovaries and any adnexal masses, in three planes. Evaluate the posterior cul-de-sac for fluid. If present, check flanks for free fluid.

5. Now concentrate on the uterus.

a. In the sagittal plane evaluate the number of gestational sacs. Make note of and measure any area suspect for implantation bleeding. You may want to magnify the image to evaluate within the sac.
b. In a transverse plane evaluate the gestational sac(s) - as in "a" (above).
c. Measure the gestational sac in three planes and record the average (mean sac diameter).

6. Look for and evaluate the yolk sac. Measure the AP diameter of the yolk sac (inner to inner).

7. **IF A FETAL POLE IS SEEN**, look for a fetal heartbeat. Document fetal heart activity using an m-mode trace. Calculate fetal heart rate (3X). **If the heart rate is less than 100 bpm (under 6 weeks), suggest a repeat examination in 1-2 weeks for viability**. Measure the CRL (crown rump length) of the fetus (or embryo) in at least three different scans and use the average measurement.

IF NO FETAL POLE/HEARTBEAT can be detected on a transabdominal scan, do a transvaginal scan to assess for a viable intrauterine pregnancy. **Pulse-wave or colour doppler should not be used because of increased intensity used in PW doppler and the possibility of bio-effects in the developing embryo.**

Note: For first and early second trimester ultrasounds, normal heart rates vary with GA: (please make sure you take more than one FHR and with TV if possible for better tracing (especially if abnormal).
Fetal bradycardia: FHR <100 bpm before 6.3 weeks gestation or FHR <120 bpm between 6.3 and 7.0 weeks gestation
Fetal tachycardia: FHR >180 bpm, FHR 170-180 bpm is borderline fetal tachycardia

8. Take note of the area where the placenta is forming, (this can usually be determined after six weeks gestational age).

9. Demonstrate as many fetal structures as possible. At 12 weeks a BPD, HC, AC, and femur length can be included.

10. If a patient's first examination and an empty early gestational sac is found, carefully assess both adnexa do a limited abdominal examination of retro peritoneal spaces, to include both flanks and Morrison's Pouch.

NUCHAL TRANSLUCENCY

- Gestational period must be 11 weeks 2 days to 13 weeks 3 days
- Fetal crown-rump length should be between 45 and 84 mm
- If NT ordered, must perform even if past the dates for NT study. (Send for blood work) If ordered by referring MD, it must be done.
- If IPS declined, but fetus falls in range, still must perform NT measurement & nasal bone
- Magnify image so the fetal head and thorax occupy the whole screen
- A midsagittal view of the face should be obtained.
- Defined by the echogenic tip of the nose and rectangular shape of the palate anteriorly, the translucent diencephalon in the centre and the nuchal membrane posteriorly.
- Minor deviations from the exact midline plane would cause non-visualization of the tip of the nose and visibility of the zygomatic process of the maxilla.

- Fetus in a neutral position, with the head in line with the spine. When the fetal neck is hyperextended the measurement can be falsely increased and when the neck is flexed, the measurement can be falsely decreased.
- Care must be taken to distinguish between fetal skin and amnion
- The widest part of the translucency must always be measured.

- In magnifying the image (pre or post freeze zoom) it's important to turn the gain down. This avoids the mistake of placing the caliper on the fuzzy edge of the line which causes an underestimate of the nuchal measurement
- Must use the maximum number of at least 3 good NT measurements that meets all the criteria.
- The umbilical cord may be round the fetal neck in about 5% of cases **(may produce a falsely increased NT)**
- With an umbilical cord around the fetal neck, the measurements of NT above and below the cord are different, use the average of the two measurements.

NT STUDY REMINDERS

- Largest NT measurements from at least 3 good measurements **(some of machines set up to average the numbers and not give maximum-Toshiba)**
- Fetal head in neutral position
- Large image: head and upper thorax only
- Nasal bone seen clearly beneath skin **(i.e.: Tip of nose than an = sign with NB thicker and brighter)**
- **If Nasal bone not seen: automatic call back**
- The + calipers on the ultrasound must be used to perform the NT measurement
- Calipers must be placed on the inner borders of the nuchal line space with none of the horizontal crossbar itself protruding into the space (i.e.: ON to ON)
- Calipers must be placed perpendicular to the long axis of the fetus
- Measurement must be obtained at the widest space of the NT

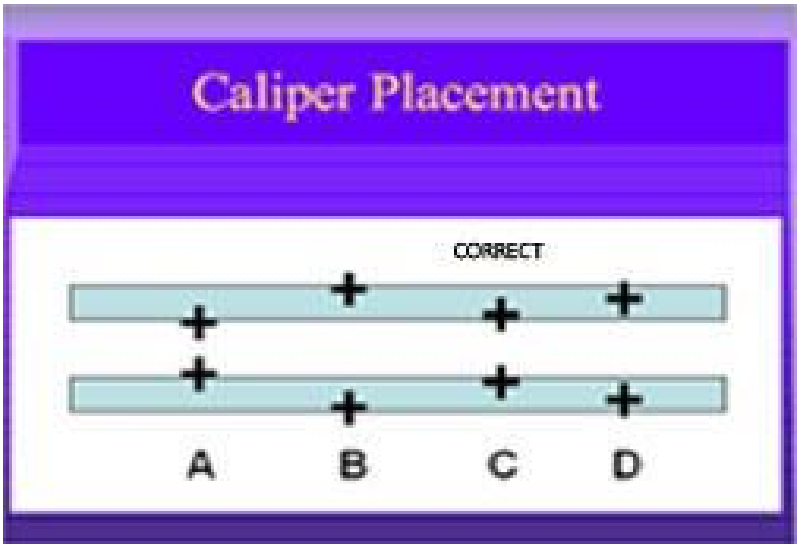


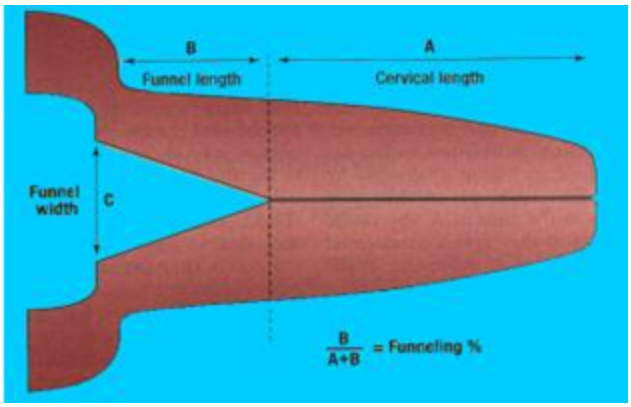
IMAGE PROTOCOL - Obstetrical First Trimester/NT Studies

- Estimate GA by LMP or other clinical information.
- Check for previous studies and if EDC has been established, **DO NOT CHANGE IT.**
- The EDC should be established when a live embryo is **FIRST** identified. If the first scan has fetal bradycardia with small embryo(<7mm), do not date the pregnancy yet but bring the patient back in a week to check fetal cardiac activity and better establish dates.
- Document the presence, location and mean diameter of the gestational sac.
- Yolk sac size (measure inner diameter) and three (3) crown-rump lengths should be documented and imaged.
- Document presence or absence of cardiac activity with m-mode. Document/Image fetal cardiac heart rate.
- In case of fetal demise, document with M-mode on TV multiple times and confirm with colour and power Doppler on fetal heart and umbilical cord on transvaginal imaging. ***Use ultrasound criteria for nonviable pregnancy.*** Doubilet PM NEJM 2013
- Document fetal number of gestational sacs when early pregnancy is examined prior to embryo visualization. Chorionicity and amnionicity should be determined, when possible.
- Image the uterus (including cervical length), ovaries (include both transverse and sagittal views) and adnexae. If the ovaries cannot be identified, image the adnexae (out until pelvic side wall and vessels) and document they could not be seen.
- Document the presence, location and size of any myomas and adnexal masses identified.
- If there is any question of free fluid, check the cul-de-sac, flanks and Morrison's pouch.
- For NT measurements, take at least three (3) measurements (in millimeters (mm)) and image. **Use the LARGEST NT measurement**. If not satisfied with the image taken, take more images.
- Round to the nearest 1/10mm (if <0.05mm, round down and if > or equal to 0.05mm round up)

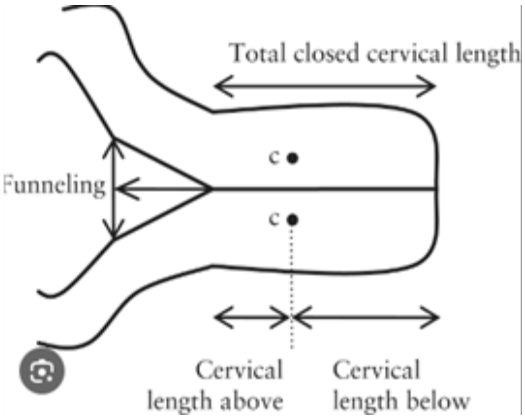
OBSTETRICAL ROUTINE (2nd Trimester and beyond)

1. Start in a sagittal plane in the midline, at the pubic bone. Measure length of endocervical canal by transabdominal and transvaginal scans.

    a. Documentation of cervical incompetence should include these measurements in diagram;



b. If there is a history of a cervical cerclage: image the entire cerclage to make sure it it intact and provide the following measurements from the diagraphm



c. Do sagittal survey of the mid uterus from the cervix to the fundus, noting placental location and fetal position.

2. Scan sagittal down the right and left sides. Note the position of the placenta and its complete:
   a. attachment to the uterine wall, and also take a good look at the walls of the uterus.
   b. **Note any fibroids or other pathology.**
   c. **Note placental cord insertion if possible.**
   d. Note the amniotic fluid volume and the fetal position.

3. Turn transverse and do the same. Note fetal number, the placental location, amniotic fluid volume, fetal position and uterine walls. Ovaries may be seen along the uterine wall.

4. Evaluate the fetal spine from the base of the skull to the coccyx in both the sagittal and axail planes, demonstrating the vertebral bodies and overlying skin. Can assess coronally if possible.
   a. Evaluate the fetal spine in the transverse plane in both posterior and lateral views, checking for abnormal flaring of the ossification centres. Make sure also that the skin surface covering the spine is intact.

5. Evaluate the fetal abdomen and thorax in the sagittal plane. Note the fetal heart, aortic arch, hemidiaphragms, stomach, kidneys, umbilical insertion, echogenicity of the fetal bowel and lungs, and the urinary bladder. Try to demonstrate the fetal heart, stomach and bladder on 1 image.
   a. Evaluate the fetal internal anatomy in the transverse plane. Demonstrate the fetal four-chamber heart (check situs), ventricular outflow tracts, 3VV, Aortic and ductal arch, (if possible) Do an m-mode tracing of the heart and calculate fetal heart rate.

Demonstrate the fetal stomach, liver, kidneys, umbilical insertion, echogenicity of the fetal bowel, and the urinary bladder.

b. Document the fetal gender, in all cases even when gender is not requested by the patient.

6. Scan the fetal cranium from side to side and from occiput to frontal bone. Note the shape of the head (lemon sign), ventricular size and cerebral anatomy. Evaluate the ventricular size subjectively in the area of the ventricular atrium at the parietal occipital sulcus. Take the width of the ventricular atrium and frontal horns. Evaluate cavum septum pellucidum, Choroid plexus, Cerebellum, Cisterna magna and nuchal fold.

   Take a BPD and head circumference measurements. This is done on an axial scan of the fetal head at the level of the thalamus and the cavum septum pellucidum (level of third ventricle). The BPD is measured from the outer edge of the near surface to the inner edge of the far surface (leading edge to leading edge), whereas the HC is measured outer edge to outer edge

   In the same plane as the BPD, angle the probe inferiorly in the posterior aspect of the fetal skull and measure the cisterna magna and nuchal fold. (This is done on a plane which demonstrates the CSP/fornix, thalamus, and cerebellum) Note must also be made of the cerebellar hemispheres with relation to their size and configuration. Measure width of cerebellar hemispheres.

   Scan the fetal face coronally noting the orbits (Image each lens), nose, palate (to rule out cleft palate) mouth, mandible and fetal profile. Repeat in a transverse and sagittal plane.

7. Take a femur length (FL) measurement. The femur length should be measured in the sagittal plane, with the long axis of the bone perpendicular to the ultrasound beam. Measure from one end of the ossified portion of the femoral diaphysis to the other end. Do not foreshorten the bone. Note the presence of four limbs, both hands and feet. Try to make sure hands are open (mandatory in all cases with choroid plexus cysts).

8. For all pregnancies 12 (twelve) weeks and over, an abdominal circumference measurement (AC) must be taken. Measurements for abdominal circumference are taken on the transverse or axial scan of the fetal abdomen. The bifurcation of the umbilical vein (as it enters the liver), the stomach and the fetal spine should be seen. If the umbilical vein extends to the anterior abdominal wall, the plane is too low. If the kidneys are visible, the plane is too low. Measure the external orthogonal diameters.

9. Calculate the estimated fetal weight using BPD, HC, FL, and AC measurements for all pregnancies. The estimated fetal weight of both fetuses should be documented in all twin pregnancies over 18 weeks GA. Also calculate the largest amniotic fluid pocket of each twin and the fetal bladder volume of each twin after 16 weeks GA.

10. In all pregnancies thirty-five (35) weeks and over, where the fetus is in breech position, the technologist must note the following:
    a. Is the neck flexed or extended?
    b. Are the hips flexed or extended?
    c. Are the knees flexed or extended?

Also note the presenting fetal part (i.e., frank breech, footling breech).

11. Evaluate the umbilical cord in cross-section to confirm three vessels. Image two (2) vessels around and fetal bladder. Note the abdominal and placental insertion.

12. Evaluate the placental location (and its proximity to the internal cervical os), texture and attachment. Look for retroplacental hemorrhage.

BREECH PRESENTATIONS

Re: 35+ week pregnancies in breech position

flexed = bent

extended or straight = standing position

1. Hips flexed or extended

   hips flexed - hips are bent

   hips extended - hips straight (knees may or may not be flexed)

2. Knees flexed or extended

   flexed knees - knees bent (hips may or may not be flexed)

   extended knees - straight legs from hips to ankles

3. Neck flexed or extended

   flexed neck - chin bent into chest extended neck - head tilted towards back

EXAMPLES:

Hips Flexed	Hips Extended
Knees Flexed	Knees Extended
Neck Flexed	Neck extended

ULTRASOUND PROTOCOL - OBSTETRICAL 2nd & 3rd TRIMESTER

NOTE: Estimate the approximate gestational age and document it on the worksheet using either the established EDC (confirm with the patient or dating US, LMP if nothing else available). For serial growth assessment (IUGR/Macrosomia) compare growth of fetus. For growth comparison, use interval change in weight. See new Sonographer worksheet.

The following information should be documented:

- Fetal lie, number and presentation
- Abnormal heart rate and/or rhythm take multiple tracings (through R/L atrium and ventricle if possible)
- Estimate the amount of amniotic fluid (increased/decreased, normal), if amniotic fluid volume is increased or decreased, calculate the amniotic fluid index and provide percentile (%).
- Placental location, appearance and its relationship to the internal cervical os – Previa should be assessed at varied urinary bladder distention and by transvaginal or transperineal scan. **Always image placental cord insertion.**
- Measure distance from lower edge of placenta to internal os., without a lower uterine segment contraction if possible
- Cervical length (by transvaginal scan): if cervical length <2.5cm or if cervical funneling seen-do not let the patient leave the clinic without contacting the reporting radiologist and referring physician first and document. Must do a TV exam if cervical length <3.0 cm on TA or suspect funneling on TA- with maternal bladder almost empty- if not possible, call a radiologist before the patient leaves.

Note: For all second trimester ultrasounds (after 24 weeks) and all third trimester ultrasounds, please ensure FHR is documented in **normal range 120-180 bpm**

If there is fetal bradycardia, **FHR < 120 bpm**, call the radiologist immediately. If the radiologist can not be reached, send the patient immediately to L & D (and call to let them know the patient is coming with fetal bradycardia).

If there is fetal tachycardia, **FHR >200 bpm**, call the radiologist immediately. If the radiologist cannot be reached, send the patient immediately to L & D (and call to let them know the patient is coming with fetal tachycardia).

If there is mild fetal tachycardia (180-200 bpm), please call the radiologist and let the referring MD know, prior to the patient leaving our department. If not available, the patient needs to be sent to L & D for further investigation.

*Images to include for assessment of gestational age **(3 measurements of each)*:**

- Biparietal diameter at the standard reference level (cavum septi pellucidi and the thalamus) – measure from leading edge to leading edge. If the fetal head is dolichocephalic or brachycephalic, the BPD may be misleading.

- Head circumference (measured at the same level as the biparietal diameter) Measure around the outer perimeter of the calvarium.
- Femur length –inappropriate measurements should lead to further investigations of upper and lower limbs to assess for extremity dwarfism, anomalies or agenesis – measurements of the humerus, radius/ulna and tib/fib may be required and assessed
- Abdominal circumference (outer edge) at the level of the junction off the umbilical vein and portal sinus.

The study should include, but not necessarily be limited to, the following fetal anatomy standard images:

- Head and face: profile of face, nose and upper lip to exclude cleft lip (demonstrate chin if possible, in same view), orbital distance with lens in each eye.
- Cerebral ventricles/ choroid plexus: Measure the posterior aspect of the lateral ventricles at the parietal occipital sulcus. Measure anterior horns (< 2cm) and image each choroid plexus.
- Posterior Fossa: measure cerebellum, cisterna magna **(N = 2-10mm)** and nuchal fold (mm). Nuchal fold is measured from skin surface to exterior surface of ossified cranial vault. **(must see either CSP/fornix in the same view).**
- Spine: sagittal (lateral profile with skin line – with spine up) down to coccyx which curves up, representative transverse views of cervical, thoracic, lumbar and sacral levels +/- coronal views.
- Heart: Confirm situs Four (4) chamber view (showing apex pointing to left, right and left outflow tracts (crossing in long axis views)) Aortic arch/ductal arch and three (3) vessel view, if possible. Fetal supine position in all first attempts- otherwise callback.
- Stomach and diaphragm
- Heart/stomach/bladder view Coronal view of the chest and abdomen
- Assess for echogenic bowel (Harmonics off) coronal and axial view of the abdomen
- Kidneys: long axis and transverse. If there is pelvicaliectasis, measure AP dimension of renal pelvis on transverse view.
- Urinary bladder
- Umbilical cord insertion site on the anterior abdominal wall and number of cord vessels (2 arteries and 1 vein) including colour Doppler of fetal pelvis at level of urinary bladder.
- Image cross section of umbilical cord.
- Extremities: pictures of all extremities to hands and feet with labels. Include femur, tibia/fibular view with foot showing normal 90-degree angle, soles of feet and hand views. (Show all long bones, femur, tibia, fibula, humerus, radius and ulna.
- **MUST** show an open hand view in the presence of choroid plexus cysts.
- Gender- document images in all cases

NOTE: All fetal anatomy must be documented on all new patients, no matter at what stage of pregnancy, after 18 weeks. If you are unable to see all anatomy (after several attempts) and the patient has not had a reliable outside scan, rebook the patient within 1 week before she leaves. If the fetus is <18 weeks GA, scan and then rebook at 18-20 weeks GA.

Presence, location and size of fibroids and adnexal masses should be documented.

In case of low amniotic fluid volume and/or IUGR in the third trimester, or a drop in EFW/AC %, abnormal dopplers, variable HR, a Biophysical profile (BPP) should be performed including a Doppler of the umbilical cord and MCA, and Doppler AFI measurement. Add a BPP if there is any concern for the fetus

NOTE: Three (3) measurements of a free loop Umbilical Artery Doppler and MCA Doppler are required. MCA PSV must be provided in all cases of possible fetal anemia.

For all BPP < 8/8, low AFI or Doppler abnormalities – do not let patients leave before speaking to a radiologist, delivering the hospital's L&D department and/or referring physician.

For SGA/IUGR/poor interval growth add BPP if not requested – speak to the reporting radiologist before letting the patient go.

If not available, send the patient to the nearest hospital - DO NOT SEND PATIENT HOME.

ULTRASOUND PROTOCOL - TWINS

In addition to the 1st, 2nd and 3rd trimester criteria, include the following in order to confirm or rule out monoamniotic/monochorionic pregnancy:

- Document the number of yolk sacs, placentas and presence/absence of separating membrane and membrane thickness.
- Always attempt to determine fetal gender at 18wks gestation or greater.
- Comparison of fetal sizes amniotic fluid (measure largest pocket surrounding each twin) and bladder volume of each twin.
- Twins should be labeled consistently. Once a fetus is designated A or B, continue to label him/her as such for the duration of the pregnancy. Always provide an image labeling each twin with respect to the membrane to assess position.
- Always document which fetus is presenting and indicate on the diagram fetal lie and position. Presenting Twin may change during pregnancy and make sure it is indicated if Twin A not presenting

ULTRASOUND PROTOCOL - REPEAT OBSTETRICAL EXAMS

On 2nd and 3rd Trimester exams, measurement need only be repeated after an interval of two (2) weeks unless otherwise requested by a referring physician.

For repeat examination:
Image the cerebral ventricles, four (4) chamber heart view, stomach, kidneys and bladder and diaphragm in **ALL** cases. If not adequately seen, take it off the tech worksheet.

For twins or multiple pregnancies, or in cases of fetal anemia, must document MCA PSV as well. These are the minimum images required.Note the placental position and cervix length.

LENGTH OF FETAL LONG BONES (MM)

	Tibia (%)			Fibula (%)			Femur (%)			Humerus (%)			Ulna (%)			Radius (%)		
Week	5th	50th	95th	5th	50th	95th	5th	50th	95th	5th	50th	95th	5th	50th	95th	5th	50th	95th
12	-	7	-	-	6	-	4	8	13	-	9	-	-	7	-	-	7	-
13	-	10	-	-	9	-	6	11	16	6	11	16	5	10	15	6	10	14
16	12	17	22	13	18	23	15	20	24	15	20	25	13	18	23	13	18	22
17	15	20	25	13	21	28	18	23	27	18	22	27	16	21	26	14	20	26
18	17	22	27	15	23	31	21	25	30	20	25	30	19	24	29	15	22	29
19	20	25	30	19	26	33	24	28	33	23	28	33	21	26	31	20	24	29
20	22	27	33	21	28	36	26	31	36	25	30	35	24	29	34	22	27	32
21	25	30	35	24	31	37	29	34	38	28	33	38	26	31	36	24	29	33
22	27	32	38	27	33	39	32	36	41	30	35	40	28	33	38	27	31	34
23	30	35	40	28	35	42	35	39	44	33	38	42	31	36	41	26	32	39
24	32	37	42	29	37	45	37	42	46	35	40	45	33	38	43	26	34	42
25	34	40	45	34	40	45	40	44	49	37	42	47	35	40	45	31	36	41
26	37	42	47	36	42	47	42	47	51	39	44	49	37	42	47	32	37	43
27	39	44	49	37	44	50	45	49	54	41	46	51	39	44	49	33	39	45
28	41	46	51	38	45	53	47	52	56	43	48	53	41	46	51	33	40	48
29	43	48	53	41	47	54	50	54	59	45	50	55	43	48	53	36	42	47
30	45	50	55	43	49	56	52	56	61	47	51	56	44	49	54	36	42	47
31	47	52	57	42	51	59	54	59	63	48	53	58	46	51	56	38	44	50
32	48	54	59	42	52	63	56	61	65	50	55	60	48	53	58	37	45	53
33	50	55	60	46	54	62	58	63	67	51	56	61	49	54	59	41	46	51
34	52	57	62	46	55	65	60	65	69	53	58	63	51	56	61	40	47	53
35	53	58	64	51	57	62	62	67	71	54	59	64	52	57	62	41	48	54
36	55	60	65	54	58	63	64	68	73	56	61	65	53	58	63	39	48	57
37	56	61	67	54	59	65	65	70	74	57	62	67	55	60	65	45	49	53

From: Sherer DM, Ghezzi F, Cohen J, Romero R. Fetal Skeletal Anomalies in Sonography in Obstetrics and Gynecology: Principles and Practice Ed by AC Fleischer et al., Appleton & Lange, Stamford, 1996.

BIOPHYSICAL PROFILE

PREGNANCIES OVER 30 WEEKS

BIOPHYSICAL VARIABLE	NORMAL (score 2)	ABNORMAL (score 0)
1. Fetal breathing movements	>1 episode of >30 sec. in 30 min.	Absent or no episode 30 sec. in 30 min.
2. Gross body movements	>3 discrete body- limb movements in 30 min. (episodes of active continuous movement considered as single movement)	<2 episodes of body- limb movements in 30 min.
3. Fetal tone	>1 episode of active extension with return of flexion of fetal limbs or trunk. Opening and closing of hand considered normal tone.	Either slow extension with return to partial flexion or movement of limb in full extension or absent fetal movement.
4. Qualitative amniotic Fluid volume	>1 pocket of fluid measuring >2 cm in two perpendicular planes.	Either no pockets or a pocket <2 cm in two perpendicular planes.

Must be a continuous 30-minute scan. If not 8/8, ensure the entire 30 minutes of continuous scanning is documented. Take an image 30 minutes after the first image is taken, to document that you have scanned the fetus for 30 minutes continuously.

FEMALE PELVIC ROUTINE

1. Begin in sagittal at the symphysis and angle up to the bladder making sure it is adequately filled to view the pelvic organs. (at least 300ml, if possible)
   a. Adjust the gains to make the bladder as echo free as possible and at the same time still being able to adequately visualize deeper pelvic structures with an evenly echogenic appearance to the uterus.

2. Evaluate the bladder, vagina, cervix, uterine body and endometrial canal in a sagittal plane. Make sure you scan the entire serosal surface of the uterus to not miss pedunculated/subserosal fibroids. Take the longitudinal of the uterus in a plane where the endometrial canal is demonstrated.

   a. Angle to the left and to the right to view the adnexae, locate the ovaries and measure them in longitudinal and AP planes.
   b. Evaluate the posterior cul-de-sac for free fluid/masses.

3. Turn the probe transverse.

   a. Beginning at the symphysis, angle up to view the bladder. Check the bladder for `fullness'.
   b. Check for smooth, thin bladder walls. Note any abnormal internal echoes. Attempt to view the distal ureters. Demonstrate ureteric jets, if possible. Mandatory if pelviectasis, hydroureter or flank pain.

4. Remain transverse and angle caudad.

   a. Check the vagina and cervix.
   b. Angle up into the uterus making sure that your gains are properly adjusted.
   c. Evaluate the uterus for size and echogenicity. Make note of the endometrial canal. Demonstrate entire endometrial stripe from fundus to endocervical canal.
   d. Take a transverse measurement of the uterine fundus with the endometrium in clear view. Measure the AP dimension of the uterus in the transverse plane.

5. Remain transverse and angle to both the right and left sides to view the adnexae (you will have to angle the probe caudal and cephalic).

   a. Locate the ovaries and take transverse measurements of both ovaries.

7. Survey the lower abdomen for any masses or fluid collections.

   If there is a large pelvic mass, evaluate both kidneys for hydronephrosis. If hydronephrosis is present, post void evaluation of the kidneys must be performed.

8. Colour flow/Doppler may be used, to assess for all masses, RPOC, endometrium to further evaluate the pelvis. Indications include:
   - Family history of ovarian/breast cancer
   - post-menopausal patients with enlarged ovaries
   - post-menopausal patients with pelvic lesions
   - post-menopausal patients on hormone therapy

IMAGE PROTOCOL - FEMALE PELVIS

1. Always document LMP and/or any relevant clinical information such as postmenopausal, HRT use, in vitro fertilization or fertility meds, OCPs
2. Long axis of the uterus
3. Transverse views of uterus at:
    a. Cervix
    b. Lower uterine segment
    c. Mid-body
    d. Fundus
4. Long axis and transverse views of ovaries
5. Long axis views of the iliac vessels (to ensure you have scanned out to pelvic side walls)
6. Measure uterine length (fundus to cervix) AP should be measured in ***transverse*** view. Document version.
7. For fibroid documentation, label fibroids on images acquired and on technologist's worksheet (draw diagram)
8. Measure endometrial thickness in the long axis view (thickest part usual near fundus or distal body). Image with the endometrial stripe along entire length (Fundal to endocervical canal)
9. Use colour Doppler interrogation for clinical situations where retained products of conception (RPOC) is questioned or if assessing for a polyp.
10. Document the size of the ovaries and calculate ovarian volume for all cases that question ovarian cancer, ovarian torsion and polycystic ovarian disease (PCOS).
11. If ovaries cannot be identified, image adnexae to iliac vessels. Follow iliac vessels in TA/TV to look for ovaries.
12. Document free fluid (check flanks) and for adnexal masses.
13. Image bladder in transverse and sagittal views.
14. Where clinically indicated (urological), document pre and post void volumes
15. Check kidneys with pelvic masses and myomatous uterus, endometriosis or for pelvic pain NYD.

For IUCD placement – measure cranial end of IUCD from cranial end of endometrium **(good position distance < 1.0cm. It should be measured from IUCD distal stem to fundal endometrial edge).** Follow IUCD in transverse image at cervix, lower uterine segment, midbody and fundus. (show arms if possible)

1. Perform 3D coronal view when possible
2. For RLQ pain – add a limited Pelvic or Abdominal
3. Always assess RT kidney, ovaries, GB/CBD and appendix.
4. Look for free fluid and echogenic inflammatory pathology.

Scanning Protocol:
In a sagittal plane:

1. Locate the cervix demonstrating the anterior and posterior cervical lips with the central linear echo
2. Locate the midline of the uterus showing the endometrial stripe from cervix to fundus.
3. Measure the AP thickness of endometrial lining
4. Tilt the probe tip to show fundus
5. Angle the probe laterally to show the left and right myometrium and slightly beyond, rotate the probe 90 degrees from your sagittal position.
6. Tilt the probe tip posteriorly (for anteverted uterus) or anteriorly (for retroverted uterus) to demonstrate the cervix; the cervix is seen as a round homogeneous area with a small central echo
7. Tilt the probe tip to image the uterus to the fundus and beyond.
8. Measure the transverse dimension of the uterus at the widest section of the superior endometrium.
9. Measure the AP dimension the uterus
10. Tilt the probe to the right and left side and angle up and down to demonstrate the ovaries and pelvic vessels.
11. Measure both ovaries in 3 dimensions
12. Measure the pathology in 3 dimensions.

PROBE MOTIONS:

1. Rotation
   - 360degrees
2. Tilt
   - Up and Down
   - Side to Side
3. In and Out
4. Sweep
   - Side to Side

Some Problems with Transvaginal Scanning:

1. Assessment of the entire uterus if large or military uterus. (must fill bladder to try to see fundus and entire serosal surface of the uterus)

2. Location of Ovaries: Usually lateral to uterus, medial to the iliac vessels but may be found out of the pelvic area or posterior or inferior to normal position. Suspended inspiration may be of use in locating ovaries. The anterior abdominal wall over the ovary may be compressed manually.

3. Large Masses (greater the 5cm) may not be shown completely due to limitations in the field of view.

4. Structures located superior to the uterus/bladder dome may be too far away to see.

5. Post-op adhesions or uterine fibroids may be very dense and cause attenuation.

ENDOVAGINAL (TRANSVAGINAL) ULTRASOUND EXAMINATION CONSENT FORM

An endovaginal diagnostic ultrasound examination allows the ultrasound transducer (probe) to be placed internally in close proximity to the pelvic organs and is performed to obtain further diagnostic information concerning the uterus, ovaries and surrounding regions.

The following procedure will be followed by the technologist:

1. The endovaginal ultrasound probe will be covered in a sterile sheath as well as a lubricant (usually KY jelly). The technologist will be wearing gloves.

2. The technologist will ask the patient to insert the ultrasound probe into the vagina, unless otherwise requested by the patient.

3. The technologist will position and then reposition the ultrasound probe as necessary to obtain the necessary diagnostic information.

4. The patient should not experience any pain or discomfort with this examination. **The technologist will immediately stop the examination and remove the probe at any time, at the patient's request.**

The diagnostic information obtained will be reported by a Radiologist and the written report of the examination results will be sent to your physician.

Please advise the technologist of any latex sensitivity or allergy, before signing this consent.

If you have any questions, please ask before signing this consent.

I, _____ consent to allow _____ (technologist) to perform an endovaginal ultrasound examination.

Date: _____ *Signature:* _____

Witness: _____

TRANSLABIAL/TRANSPERINEAL SCANNING

Choose appropriate linear or curvilinear transducer probe.

Indications:

1. When there is a contraindication to perform transvaginal imaging (esp. in pregnancy to assess cervical length or placenta previa)
2. Perineal/labial mass abscess
3. Urethral Assessment

Scanning Protocol - For cervical assessment:

1. Locate the cervix demonstrating anterior and posterior cervical lips with the central linear echo
2. Locate the midline of the cervix showing endometrial strip from the internal to external cervical os.
3. If external os is open then measure width
4. Assess for inferior edge of placenta to internal cervical os.

For masses:

1. Locate mass and indicate as AOI
2. Image sagittally and axially through mass including surrounding soft tissues. Include at least 3-5 images in both planes (more if mass is larger)
3. Must include Color/Doppler interrogation

TRANSVAGINAL SCANNING

Indications:

1. *Infertility Patients*
   a. Viewing and measurement of ovarian follicles in patients for infertility treatment undergoing IVF or AI (in vitro fertilization or artificial insemination) (? PCOS).
   b. Ultrasound guidance for follicular aspiration.

2. *Gynecology*
   a. Better evaluation of the uterus, ovaries, fallopian tubes (only with pathology) and adnexae. TV scanning should be employed in the evaluation of ovarian cysts? ovarian pathology, endometrial thickness, abnormal uterine bleeding? endometrial pathology, adnexal masses, poor or non-visualization, post-menopausal bleeding, postmenopausal evaluation of the endometrium.
   b. Especially useful when scanning obese patients who are not easily visualized with transvesical scanning.

3. *Patients with Empty Bladder*
   a. Useful for patients who cannot drink fluid to distend the bladder or in emergency cases where the patient must remain NPO and cannot be filled by IV due to time restrictions.
   b. A transvaginal examination alone does not constitute a complete examination and should only be conducted alone on the advice of a physician, or where the patient cannot fill her bladder.

4. *Early Pregnancy*
   a. Confirmation of intrauterine pregnancy viable IUP earlier than transvesical scanning.
   b. Useful in cases of suspected ectopic pregnancy/heterotopic pregnancy.
   c. Also shows much greater detail in early growth of the fetus where early BPD is required.

5. *Late Pregnancy*
   a. Can be used as a complementary examination in second and third trimester pregnancy to image cervix for competency and to show the internal os, fetal head and position of a low lying placenta when it is difficult to show in the transvesical study.

6. **All 18 week Anatomy Obstetrical Ultrasounds.**

Absolute Contraindications:
1. Pediatric Age Group
2. Premature rupture of membranes.
3. The patient refuses the examination.
4. A patient who has never been sexually active and has never had an internal pelvic examination.
5. A patient who does not understand English and who does not have an interpreter available.

Relative Contraindications:
1. A third trimester pregnancy with a dilated cervix.
2. A patient with an incompetent cervix **and bulging membranes**.
3. Bleeding from known placenta Previa.

Patient Explanation:
1. When you have imaged the pelvic structures to the best of your abilities with the transabdominal method stop scanning and address the patient directly.
2. Your explanation must include:
   a. a general reason for the necessity of the examination
      i.e..I am having difficulty imaging certain structures
   b. a brief explanation of transvaginal ultrasound
      i.e..it is a different type of scan that allows closer visualization of the pelvic structures through the use of a probe which is inserted into the vagina. Allay the patient's fears by stating that the probe is only inserted a small distance and should not be uncomfortable or painful at all but may feel a little cold.
   c. **Be very clear that it is the patient's decision to proceed with the transvaginal examination.**
   d. Verify consent
      i.e..Do you wish to have the examination?

At this point, the patient is instructed to empty her bladder completely and return to the examination room. **A consent form must be signed if opposite sex sonographer.**

e. Again, stress that the examination is internal but should not be uncomfortable or painful. Assure the patient that if they are not tolerating the examination well, it will be immediately terminated at their request.
f. While preparing the probe, explain to the patient that a latex condom, together with sterile lubricating gel is going to be used. **Ask the patient if they have a known latex allergy**. If so, document this and use a non-latex alternative.
g. Before insertion, confirm consent.
   i.e.: Do you have any further questions before I begin?
h. Maintain a dialogue with the patient during the examination regarding their tolerance of the procedure, and the time remaining for the examination.
i. **It is the patient's right to terminate the examination at any time. Even during the procedure.**

ORIENTATION OF ANATOMY ON MONITOR

1. *Longitudinal*:
   - Slightly different orientation due to the placement of the probe
   - Anterior (Ventral) part of the patient is on the upper portion of the monitor; posterior on the lower portion of the monitor.
   - Cephalic (toward the head) is shown on the left side of the monitor; caudad (toward the feet) is shown on the right side of the monitor.

2. *Axial/Coronal*:
   - As with other methods of scanning, the right side of the patient is shown on the right side of the monitor. Confirm probe orientation by touching probe surface and looking at the screen.
   - Anterior is shown on the upper portion of the monitor and posterior is toward the lower portion of the monitor.

The probe is positioned with the tip at the cervix pointing toward the patient's head. The tip of the probe will have the smallest viewing angle.

ENDOMETRIUM

ISOECHOIC HYPERECHOIC HYPOECHOIC TRILAMINAR

Measure the thickness of the endometrium, at the body of the uterus, making sure that the area of interest is perpendicular to the midline sound beam. Note whether the endometrium is:

a. ISOECHOIC — This means that the echogenicity of the endometrium is the same as the echogenicity of the myometrium.
b. HYPERECHOIC — This means that the echogenicity of the endometrium is brighter than that of the myometrium.
c. HYPOECHOIC — This means that the echogenicity of the endometrium is less than

that of the myometrium.

d. TRILAMINAR — If the uterus contains a fibroid or is retroverted you may have difficulty obtaining a good perpendicular measurement. Explain the reason why in the report.

DOPPLER EVALUATION OF THE ARTERIES OF THE PELVIS

Colour Doppler Tips:
To Increase sensitivity (especially for low velocity):

1. Decrease velocity scale or PRF
2. Move focus position to the region of interest
3. Decrease colour box
4. Increase colour gain
5. Decrease wall filter

To Decrease flash artifact:

1. Decrease colour gain
2. Decrease the depth of field of view
3. Decrease sector size
4. Use Zoom function

Power Doppler Imaging:

- Increased sensitivity to low velocity flow
- No direction of flow information
- No velocity information
- More flash artifacts
- Use on all masses if cannot obtain flow on colour Doppler
- Decrease 2D gain to increase sensitivity
- Sometimes flow can be eliminated with too much transducer probe pressure
- Use in situations to figure out solid vs cystic:
    a. Soft tissue lumps
    b. Breast lumps
    c. Lymph nodes
- Low flow/diminished flow: Confirmation/exclusion of testicular torsion
- Do not forget to obtain spectral tracing to confirm it is not artifact

Spectral Doppler:

- If detect flow on either colour/power Doppler, must perform spectral trace to confirm vascularity is present: confirms mass is SOLID or vascularity is present.

Spectral Doppler Optimization:

- Angle
- Spectral Gain

- Gate Size and position
- Velocity Scale
- Baseline
- Avoid transducer motion

Spectral Gain:
- Gain should be adjusted to outline the contour of the depicted waveform
- Too low a setting falsely suggests absent flow
- Independent of colour and power gains

Angle:
- For MCA Doppler:
- Angle of insonation of zero degrees ensures the most accurate measurement of the PSV.

UTERINE ARTERIES/BRANCHES

On each side of the midline, identify the uterine artery as it ascends along the lateral wall of the cervix and distal uterus. Record peak systolic and diastolic velocities, perform spectral analysis, and calculate the pulsatility index, as follows:

a. In the sagittal plane at midline, angle in the direction of the cervix.
b. Demonstrate the junction of the uterine body and the cervix, position it directly in line with the central beam.
c. At the cervico-corporeal junction, rotate the probe 90^{o} counterclockwise to locate the ascending branch of the uterine artery of the dominant side. If uncertain, interrogate both sides.
d. Place the colour flow gates over the region of the uterine artery. Typically, velocities in this vessel are 30 cm/sec (range 10-60 cm/sec). Intense colour concentration is usually seen within the artery. If colour is not detected, angle the probe slowly up or down until colour is seen.
e. Place a sample point within the "vessel" demonstrating colour, increase the pulse wave velocity range to 16 or greater in order to display the maximum velocity.

f. To obtain pulsatility index (PI) trace the waveform of one cycle, starting at the baseline to the peak systole and down to the end diastole
g. If the PULSATILITY INDEX (PI) obtained is not higher than the previous study, Doppler the uterine artery on the other side, and indicate which side the flow was obtained from.

OVARIAN/UTERINE ARTERY OVULAR BRANCHES

Identify branches of the ovarian or uterine artery in the vicinity of the ovary/follicles, and using the equipment settings shown above, record the peak systolic and diastolic velocities, perform spectral analysis, and document resistance index (RI) for each vessel. In each case, be sure to document the highest peak velocity (PV) value on each side, and also document a resistance index (RI). Follow the following protocol:

a. In the transverse plane locate the largest follicle within the ovary. Whenever possible, align the follicle within the central beam (area of maximum colour flow).

b. With the colour flow velocity set at 8, place the colour flow gates over the follicle. If no flow is obtained, lower the colour flow velocity down to four.

IMPORTANT: You may move the colour gates around the ovary/follicle OR you may change the area of interest by moving your probe, BUT NOT AT THE SAME TIME**.**

c. Place the sample point in the area where colour is detected, usually found around or adjacent to the lead follicle.

d. Increase or decrease the Pulse Wave velocity range where necessary to get the optimal spectral display.

e. Measure maximum peak systolic velocity and end diastolic velocity.

f. Compare RI and PV with the previous day's measurements. Try to obtain higher follicular velocity values, but make sure they are not artifactual (remember Doppler angle must be <70).

Repeat procedure on the left ovary.

UTERUS

Using the equipment settings shown above, record the peak systolic, and where possible diastolic velocities, as well as Doppler spectra in the endometrium, and in the inner; mid, and outer thirds of the myometrium. Where calculable, record pulsatility and/or resistance index.

PELVIC MASS/OVARIAN SCREENING

Using the equipment settings shown above, interrogate all vascular structures within and around the ovary or mass itself, and record in each case the maximum peak systolic and diastolic velocities, and perform spectral analysis including calculation of pulsatility and/or resistance indices.

CYCLE MONITORING PATIENTS

1. On the first day of cycle monitoring, patients must drink 5 (8 oz) glasses of water, one hour prior to arrival. The ultrasound technologist is required to:

a. Perform a transabdominal pelvic ultrasound examination demonstrating the uterus, cervix, vagina, right ovary, right adnexa, left ovary and left adnexa in both longitudinal and transverse planes. (no lubricating gel is to be used at any time due to potential spermicide effects) Explain to the patient that there are other lubricating methods if needed (i.e. use of water over the condom if necessary). Once the patient has established a lubricating preference, please continue with the preference throughout the cycle unless the patient instructs otherwise.

b. After the patient has emptied her bladder, a transvaginal examination is performed evaluating the same parameters.

2. On days five to nine of cycle monitoring, the ultrasound technologist is required to:

a. Measure endometrial thickness.
b. Carefully scan the uterus and right and left adnexa, recording the existence and size of any abnormalities (eg. fibroids, cysts, ...). If a cyst is encountered, record the texture, shape and size in three dimensions.
c. Thoroughly scan the right and left ovaries for follicles; count the follicles that are ≥ 0.5 cm in size and measure the width, depth and length of each follicle that is ≥ 1.0 cm. Record the average of these three measurements for each follicle.

3. On days ten, eleven, twelve... until cycle is complete, the ultrasound technologist is required to:
   a. Measure endometrial thickness.
   b. Measure the size of each follicle > 1.0 cm in three dimensions
   c. Record the number of follicles and the average follicle size
   d.

DOCUMENTATION AND IMAGING

Whereas it is important to document and record the entire examination, time spent locating vessels need not be recorded. Record measurements on Follicle Monitoring Form.

The following measurements and readings **MUST ALWAYS BE INCLUDED** in your study:

1. Endometrial thickness
2. Endometrial echo pattern
3. Total number of follicles ≥ 0.5 cm in right and left ovary
4. Average size and number of follicles ≥ 1.0 cm in right and left ovary in three dimensions
5. Free fluid collection
6. Any Abnormalities - measurements, location and echo pattern.

IN VITRO FERTILIZATION (IVF) PATIENTS

1. *On Day 0, the ultrasound technologist is required to:*
   a. perform a pelvic ultrasound examination
   b. after the patient has emptied her bladder, perform a transvaginal examination
   c. measure endometrial thickness
   d. record the number of follicles seen that are ^{3} 0.5cm in size,
   e. document the largest follicle (no colour flow Doppler)
2. *On Days One to Six the ultrasound technologist is required to:*
   a. perform a transvaginal examination; record the echogenicity and measurement of the endometrial lining
   b. Thoroughly scan the right and left ovaries; count the number of follicles >0.5cm and measure each follicle >1.0cm in 3 dimensions recording the average of these dimensions from the largest to smallest.
3. *On Days five, six, etc. (or for follicles 1 cm or over) ... until the day before egg retrieval the ultrasound technologist is required to:*
   a. perform a transvaginal examination; record the echogenicity and measurement of the endometrium
   b. thoroughly scan the right and left ovaries; count the number of follicles > 0.5cm and measure the size of each follicle >0.1cm in 3 dimensions

4. *On the day of egg retrieval, the ultrasound technologist is required to:*
    a. As each follicle is aspirated, document and image those follicles which have colour flow or no colour flow and give the results to the embryologist.
5. *On the day of the embryo transfer the ultrasound technologist is required to:*
    a. measure the endometrial thickness and note echogenicity
6. *On day seven of the embryo transfer the ultrasound technologist is required to:*
    a. perform a transvaginal examination
    b. perform an LTD abdomen examination
7. *On day fourteen of the embryo transfer the ultrasound technologist is required to:*
    a. perform a transvaginal examination
    b. perform an LTD abdomen examination

DOCUMENTATION AND IMAGING

Whereas it is important to document and record the entire examination, time spent locating vessels need not be recorded.

The following measurements and readings **MUST ALWAYS BE INCLUDED** in your study:

1. Endometrial thickness
2. Endometrial echo pattern
3. Colour flow/Doppler of the uterus (first day only unless positive)
4. Total number of follicles _ 0.5 cm in right and left ovary
5. Average size and number of follicles _ 1.0 cm in right and left ovary
6. Free fluid collection
7. Any Abnormalities - measurements, location, echo pattern, and Doppler values if applicable.

OVARIAN HYPERSTIMULATION PROTOCOL

Objective: To evaluate the volume of free fluid collection for possible transvaginal transperineal aspiration.

Procedure: All measurements must be taken with the patient in the supine position as the volume in each pocket will vary with patient position. Most importantly, the measurement of the fluid collection in the PCDS must be taken transvaginal. The fluid in the adjacent pockets must be seen to communicate with PCDS. The depth (AP diameter) should be deep enough for the aspiration needle.

A note of the patient's condition during the ultrasound should be reported to the nurse. i.e., Difficulty breathing, site of pain

ENDOMETRIAL BIOPSY

Patient Preparation: Full bladder, enough to reduce the curve of uterine body and cervix.

Transabdominal Scan:

1. Identify the cervix in sagittal plane
2. Rotate the probe until cervix is seen connecting to the mid-sagittal plane of the rest of the uterus
3. Adjust magnification and definition for best visualization
4. Identify Curette
5. Have sample bottle available for collected sample

Images Required:

1. Mid-sagittal plane showing uterus including cervix
2. Mid-sagittal plane showing curette
3. Mid-sagittal plane after biopsy

SONOHYSTEROGRAPHY

Indications:

1. Infertility
2. Habitual Abortion
3. Sterility
4. Bleeding
    - Menorrhagia
    - Metrorrhagia
    - Menometrorrhagia
    - Intermenstrual Bleeding
    - Premenstrual Bleeding
    - Postmenstrual Bleeding
    - Break-through Bleeding
    - Premenopausal Bleeding
    - Perimenopausal Bleeding
    - Postmenopausal Bleeding
5. Primary and Secondary Amenorrhea
6. Pelvic Pain
7. Myomas
8. Uterine Malformations
9. Recurrent Mole
10. Retained Products
11. Polyps
12. Carcinoma
13. Evaluation of Hormone Therapy
14. Hyperplasia
15. Adenomyosis
16. Combined Screening

Contra-indications:

1. Acute vaginitis or cervicitis (PID)
2. Pregnancy

Timing of Procedure:		
1.	In patients of childbearing age:	Day 7 - 10 of menstrual cycle
2.	In patients with menorrhagia:	Time of light bleeding

Room Preparation:

The examination room should be equipped with a gynecological bed, a movable light source, the ultrasound unit, a cart to hold the sterile tray and supplies.

Disposable Chart for:

Dispose in Regular Garbage	***Dispose in Stericycle (yellow bags)***
Gloves, Condoms	*Catheters*
Sanitary pads and tampons	*Speculums*
Underpads	*Blood, blood products, bloody body fluids*
Personal Protective Equipment (Gloves, masks, gowns)	
Empty Specimen Containers (saline)	
Clinical Office Waste	
Waste from washrooms, kitchens and public areas	
Saline syringes – 3 cc and 20 cc	

Supplies:

1. 5 French AS disposable balloon tip catheter or plastic cannula.
2. A sterile tray containing:
    a. Saline 20 cc
    b. Single use speculum
    c. Iodine compound
    d. Single use lubricant if needed
3. Syringes: The fertility catheter comes with a 3-cc syringe for the inflation of the balloon. All studies use a 20-cc syringe.

Procedure:

1. Prior to the procedure the patient is given an information/consent sheet and a questionnaire to complete
2. Immediately prior to the procedure the patient is requested to empty her bladder
3. The physician reviews pertinent findings on the questionnaire and explains, in further detail, about the procedure and why it is indicated as far as the patient's clinical presentation. The patient will then sign to acknowledge their understanding of the procedure.
4. The patient is placed in a lithotomy position and following prep of the cervix, the catheter is inserted.
5. 5-20 cc's of Saline is instilled into the uterine cavity at which time the uterus, tubes and adnexae are evaluated.
6. At the end of the procedure, during the catheter removal, the lower uterine segment and cervix are visualized.
7. The patient is advised, again, that there may be some discharge, or spotting. If the patient did not bring a panty liner with her, offer one.
8. The patient is advised to relax in the waiting room for 10-15 minutes following the procedure and if at that time there are no complaints, the patient is discharged.

Protocol:

1. Assure that the room is set up with all necessary supplies, with a second set available in case they are needed.
2. Check that all paperwork is completed including the white copy, the preliminary scan report forms, and the patient questionnaire.
3. Make sure that the patient empties her bladder before the procedure is to begin.
4. Assist the doctor as required. Imaging and recording structures of interest in the appropriate planes, using Doppler when requested.
5. Aid the patient from the table after the procedure and check on her until she leaves the department.

SONOHYSTEROGRAPHY PATIENT INFORMATION AND CONSENT FORM

WE ARE THE WORLD'S LARGEST PROVIDERS OF SONOHYSTEROGRAPHY SERVICES

Your doctor has referred you to our clinic for a sonohysterogram. This ultrasound examination provides considerable information about your uterus and fallopian tubes, without the use of X-rays, X-ray dye, or an anesthetic. It has become the "gold standard" in assessing the causes of uterine bleeding and for infertility. Our centre has a proven track record in the performance of this procedure and True North Imaging has performed more than 300,000 of these procedures in Ontario.

Indications for this are numerous and may include: irregular vaginal bleeding, infertility, miscarriages, any suspected abnormalities of the uterus, or as a preliminary evaluation for in-vitro fertilization. You will have preliminary scans of your pelvis before the test.

Take 2 Advil one hour prior to the sonohysterogram to relax your uterus, tubes and muscles. While the procedure itself is usually quite quick, you should plan to be in the clinic for up to an hour. A thin catheter is placed through the cervix into the uterus. Normal saline (a salt water solution) is instilled through the catheter in order to allow us to see the inside of the uterus and if deemed appropriate, a contrast solution is used to assess the fallopian tubes.

During the procedure you may feel some cramping as the saline is instilled. Some patients have stated that there has been slight discomfort during the catheter placement; however, most patients tolerate it easily. After the test, you may resume your normal activities. Please be advised to bring a sanitary napkin on the day of your appointment.

Side effects and complications: Procedure-related side effects and complications are uncommon and usually mild. These include pelvic pain (3.8%), vagal symptoms (3.5%), nausea (1%), fever (0.8%) and possible bleeding. If you have tubal assessment with contrast there is a slight increased incidence of those symptoms. With our extensive experience, our patients' incidence is far less. However, if there is sufficient concern, seek medical attention.

If you have any questions or comments, please feel free to consult the physician or our staff. Please sign this sheet to confirm that you have read and understand the details of the procedure, the possible side effects and that your questions have been answered.

Name: _____ Date: _____ Witness_____

Please give back to Ultrasound receptionist at Time of your Sonohysterogram

GU TRACT PROTOCOL

Perform Renal and Transabominal pelvic ultrasound for the following symptoms (list not exhaustive):

Caveat: bladder needs to be full to do an adequate TA exam (at least 300 ml in an adult)

- elevated Cr or low eGFR
- back pain, flank pain or pelvic pain
- hematuria, proteinuria
- urgency, frequency, hesitancy or nocturia
- burning sensation
- cloudy or foul-smelling urine
- urethral discharge
- BPH
- pre and post void bladder
- bladder residual

Add on TV if Symptoms Include:

- *any gynecology concerns*: endometriosis, ovarian or adnexal pathology, previous PID etc.
- patient unsure if it is hematuria vs vaginal bleeding (especially for possible postmenopausal bleeding)
- Adnexal pain which could be ovarian and do not see ovaries adequately on TA
- Concern about fistula
- Concern for urethral abnormality

Add on TV if during TA Ultrasound Examination (list not exhaustive):

- Uterine masses (not well assessed on TA especially in Postmenopausal patient)
- Endometrial abnormality or abnormally thick endometrium (especially in Postmenopausal patient)
- Adnexal mass (? ovarian or bowel or other)
- Free fluid
- Bladder mass (especially near base, better seen on TV)
- *Any gynecology abnormalities* seen on TA to better assess on TV (ovarian or adnexal masses)

If there is a question about bladder or organ prolapse, recommend dedicated pelvic floor ultrasound (as routine pelvic ultrasound will miss the diagnosis as we do not measure angles etc.).

MALE PELVIC SCANNING ROUTINE

A survey of the entire pelvis must be completed in both sagittal and transverse planes to include the external iliac vessels.

1. Scan in the sagittal plane beginning in the midline at the level of the symphysis.
2. Angle the probe cephalad to view the urinary bladder. Adjust gains to make the bladder appear as echo free as possible.
3. Check for smooth, thin bladder walls. Look for any abnormal echoes within the bladder. Attempt to view distal ureters. Assess for ureteric jets.

4. In midline measure AP and longitudinal dimensions of the bladder.
5. Angle the probe from side to side to evaluate the right and left sides of the pelvis.
6. Turn the probe to a transverse position. Begin scanning in the midline at the level of the symphysis.
7. Angle the probe cephalad through the urinary bladder to evaluate it.
8. Take transverse measurement at the widest point. Calculate volume.
9. Angle the probe caudad to evaluate the prostate gland. Take transverse measurement.
10. Sweep to both the right and left sides in a transverse plane.
11. Turn the probe to a sagittal position and evaluate the prostate gland to the right and left and slightly beyond. Take AP and longitudinal measurements at midline (urethra). Calculate volume.
12. Evaluate seminal vesicles in both sagittal and transverse.
13. **ALWAYS DO A POST-VOID SCAN** to demonstrate the amount of residual urine. Measure the bladder in the same way as pre-void.
14. Calculate the % residual urine in the following way: volume (in cc) = L X W X H X .5236

RATIO $\frac{\text{Post-void Volume}}{\text{Pre-Void Volume}}$ X 100 = _____ % Retention

15. If there is a moderate amount of residual urine, examine both kidneys and flanks.

Normal Measurements:

PROSTATE 4 x 3 x 2cm

IMAGING PROTOCOL - MALE PELVIS:

- Sagittal and transverse views of the prostate from the apex to the base of the gland, seminal vesicles and bladder.
- Calculate prostate volume
- When clinically indicated (urological), document pre and post void volumes

TRANSRECTAL PROSTATE ULTRASOUND

Indications to perform a Transrectal Ultrasound:

Indications for transrectal ultrasound (TRUS) shall include:

- Prostate cancer for biopsy and procedural guidance
- Infertility
- Male pelvic pain (prostatitis)
- hematospermia
- evaluation of other adjacent pelvic masses

Do not perform a transrectal ultrasound if the patient presents with the following contraindications:

Absolute Contraindications:

- Uncorrectable bleeding Diathesis
- Inflammatory Bowel Disease - especially Crohn's Disease
- Surgical absence of rectum or ilio-anal pouch

Relative Contraindications:

- uncooperative patient
- acute painful perianal disorder
- severe hemorrhoids or large rectal mass
- UTIs and Acute Prostatitis - as it increases risk of infection - TRUS can be delayed until treated.

1. With the patient in the supine position, scan the distended urinary bladder and prostate gland in the transverse and longitudinal sections.
   a. Calculate the volume of urine within the bladder.

2. Have the patient void as completely as possible.
   a. Measure the residual volume, if any, and calculate the percent retention.

3. Scan both kidneys as per standard abdominal routine.
   a. Measure the longitudinal length of each kidney.

4. Prepare the probe as in the endocavity probe preparation protocol**. BE SURE TO ASK THE PATIENT IF ANY LATEX SENSITIVITY**. With the patient in a left lateral decubitus position, insert the sheathed probe into the rectum with orientation dial facing sonographer.

NOTE: Insertion and removal of the transducer may be facilitated by asking the patient to perform the Valsalva maneuvers.

5. Begin in a transverse plane. Scan the seminal vesicles and vas deferens from insertion to lateral end by rotating the probe.
   a. Scan the gland itself from the base to the apex in a transverse plane, paying particular attention to the internal echo pattern.
   b. Freeze images of the base, mid-gland, and apex. Measure transverse dimension at the largest portion of the gland.

6. Adjust the probe 90 to obtain a longitudinal view. Scan the right seminal vesicle from the insertion to the lateral end, measuring the diameter at the insertion site.
    a. Scan the left seminal vesicle in the same manner as the right.
    b. Scan the prostate from right to left, freezing and labeling successive images as to their relation to the midline. The midline image should include the urethra and verumontanum as landmarks. Longitudinal dimension should be measured at midline.

7. Calculate prostate volume as per the formula: (AP)(W) (L) (.5236)

TRUE NORTH IMAGING

PATIENT INFORMATION ON PROSTATE ULTRASOUND

You are scheduled to have a transrectal ultrasound examination of the prostate on

_____ at _____

This examination is designed to obtain detailed images of your prostate gland. The entire test usually takes between 30 minutes. To begin with, the technologist will use ultrasound to examine your bladder. Your bladder must be full for this part of the exam. Once this is complete, you will be shown to the washroom, where you can empty your bladder. The test continues with another ultrasound of your bladder, and your kidneys. Finally, a very small ultrasound camera will be gently inserted into your rectum to obtain images of your prostate. This is obviously somewhat uncomfortable, but rarely causes any pain. If you do feel any pain, be sure to inform the technologist doing the exam.

Preparation for this procedure is very important. You must drink 32 ounces (1L) of fluid. This can include water, juice, coffee, tea, etc. You must have completed drinking one hour prior to your appointment time. If you feel this may be a problem, you are welcome to come to the clinic early (one hour) and drink your fluids here. We will try to examine you as soon as possible, so that you won't be uncomfortable for too long. Eat the meal nearest your examination – There is no reason not to eat.

If you have any questions, feel free to call our office. A technologist will be happy to speak to you or return your call if temporarily unavailable.

TRUE NORTH IMAGING

ENDORECTAL (TRANSRECTAL) ULTRASOUND EXAMINATION
CONSENT FORM

An endorectal diagnostic ultrasound examination allows the ultrasound transducer (probe) to be placed internally in close proximity to the pelvic organs and is performed to obtain further diagnostic information concerning the prostate gland and surrounding regions.

The following procedure will be followed by the technologist:

1. The endorectal ultrasound probe will be covered in a sterile sheath as well as a lubricant jelly. The technologist will be wearing gloves.

2. The technologist will carefully insert the ultrasound probe into the rectum.

3. The technologist will position and then reposition the ultrasound probe as necessary to obtain the necessary diagnostic information.

4. The patient may experience some discomfort but should not experience any pain with this examination. **The technologist will immediately stop the examination and remove the probe at any time, at the patient's request.**

5. The diagnostic information obtained will be reported by a Radiologist and the written report of the examination results will be sent to your physician.

Please advise the technologist of any latex sensitivity or allergy before signing this consent.

Please answer the following questions:

1. Have you ever had rectal surgery (e.g., removal of the rectum or creation of an ileo-anal pouch? YES_____ NO_____
2. Do you have a known history of Crohn's Disease or ulcerative colitis? YES_____ NO_____
3. Do you have a known bleeding disorder or take any blood-thinning medications? YES_____ NO_____

If you have any questions, please ask before signing this consent.

I, _____ consent to allow _____

(technologist) to perform an endorectal ultrasound examination.

Date: _____ Signature: _____

Technologist: _____

Revised 24/3/2025

TESTICULAR ROUTINE

Patient Position:

a. Supine with the ankles crossed and knees squeezed together.
b. Ask the patient to ensure the penis is located over the pelvis.
c. Roll a gown lengthways and place it under the scrotum with the ends tucked tightly under the patient's buttocks.
d. Place a drape over the patient's legs and bring the gown down over the penis, have the patient hold the sides of the gown tightly (the only area exposed is the scrotum).

Procedure:

1. **With scanning hand gloved,** demonstrate on 1 image using multiple focal zones, both testes in the transverse plane to compare echogenicity and scrotal skin thickness.
2. The left and right hemiscrotum are now imaged separately. Start with the unaffected side. Indicate on the screen which testicle, and plane, is being scanned. In the transverse plane scan through testis superior to inferior pole. Measure at the widest part. It may be necessary to use a split screen for proper measurements. In the longitudinal plane scan through from one side to the other side. Longitudinal and AP measurements should be taken at the longest axis of the testis.
3. Check for flow within both testicles on colour Doppler. Demonstrate both arterial and venous flow on pulse Doppler (centrally)
4. Identify the epididymis and scan the length of the epididymis from head to tail. Measure the head in at least two dimensions and check for cysts or solid masses (measure, when found, in 3 planes). Document the comparative echo pattern of the epididymis in relation to the testis. Use a split screen to compare the right epididymal head and tail to the left side.
5. Demonstrate flow within epididymis and compare with adjacent testicle (same image)
6. Scan the remainder of the scrotum to search for fluid collections or masses.
7. Now do the affected side.

NOTE: If dilated veins (varicoceles) are noted or if the physician is questioning a varicocele, measure the diameter of the veins in axial images with and without the Valsalva maneuver. The scanning procedure outlined above should be repeated if negative on supine scan and in the upright position.

IMAGE PROTOCOL - Scrotum

a. Long axis and transverse views of the testicles and epididymii.
b. Split image with transverse views of right and left testicles. (to compare echogenicity)
c. Document testicular blood flow including colour and spectral tracing showing arterial and venous flow centrally within testes. ***Keep all technical settings the same when comparing each side.***
d. Image of comparison colour Doppler of testicles and epididymii to help rule out acute epididymitis.
e. Evaluate varicoceles with valsalva technique in supine and upright positions. Measure the maximum size of the vein in a transverse view **without colour Doppler (on axial image).**

TYROID ROUTINE

1. Place the patient in a supine position with their neck hyperextended.
2. Have the patient swallow. You should be able to palpate the thyroid gland by using both thumbs and running them along the patient's neck using the trachea as a guide.
3. Demonstrate both lobes on 1 image to compare size and echogenicity.
4. With the patient's head turned away slightly from the side being scanned, scan the unaffected lobe of the gland using multiple focal zones. Scan sagittal from the Carotid Artery to trachea. Measure length and AP dimensions at the longest portion. A split screen may be necessary to accommodate the entire length.
5. Scan in a transverse plane from superior to inferior poles. Measure at the widest point.
6. Demonstrate the isthmus in both sagittal and transverse planes. Measure the AP thickness.
7. If a "nodule" is found, determine its echo characteristics (cystic, solid or complex) and measure it in three dimensions. Apply Colour Doppler. By palpation, determine if the nodule seen on ultrasound corresponds to a nodule that can be felt on the examination.
8. Scan along the carotid vessel in both sagittal and transverse planes for the presence of any extra-thyroid nodules or lymph nodes. If parathyroid glands (usually 2 superior and 2 inferior) are noted, measure in 3 dimensions and note location.

Image Protocol - Thyroid

a. Obtain long axis and transverse views of both lobes and transverse view of isthmus
b. Document size of both lobes and AP measurement of isthmus.
c. Assess vascularity of thyroid to rule out thyroiditis
d. Document nodules (echogenicity, borders, microcalcifications, vascularity and size) Use Ti-rads lexicon descriptors.
e. Image vessels in sagittal and transverse for adjacent lymphadenopathy and thrombosed veins.

Lymph Nodes:

a. Ensure each LN (lymph node) has an echogenic hilum no matter the size and provide an image.
b. Measure the length in sagittal view
c. Measure the W and AP in transverse view.
d. Ensure there are no echogenic foci (calcification/cystic change) within the lymph node.
e. Measure cortex of lymph node.

PAROTID GLAND

1. The patient should be in a supine position with their neck slightly hyperextended, and their head obliqued away from the side being scanned.
2. Start with the unaffected parotid gland and scan it in a transverse plane beginning at the superior border. Remember to include the portion of the gland that lies on the face. Measure at the widest point.

3. In a longitudinal plane scan, once again, through the glandular tissue. Measure AP and longitudinal measurements at the longest point.
4. Scan down the carotid chain to the base of the neck looking for any lymph node involvement.
5. If necessary, move to the submandibular gland under the angle of the mandible and scan it in both transverse and longitudinal planes.
6. Repeat the procedure for the affected side.

Careful attention must be paid to the proper labeling of the images since glandular tissue appears the same in all locations. Therefore, the parotid gland must be labeled PAROTID, and the submandibular gland must be labeled SUBMANDIBULAR.

ULTRASOUND PROTOCOL - BREAST

Indications:

1. Evaluate palpable abnormalities, and other clinical changes, male or female
2. Bloody or clear/serous nipple discharge
3. Focal, persistent non-cyclical breast pain
4. Further assess equivocal or abnormal mammographic findings
5. Initial imaging modality for women under 30 years old, pregnant, and/or lactating
6. Evaluate problems associated with breast implants (need requisition)
7. For supplemental screening in elevated risk patients who cannot undergo or are unwilling to undergo high-risk MRI (need requisition)
8. For supplemental screening in women with dense breasts (need requisition)
9. For women with axillary abnormalities/axillary lymphadenopathy
10. Follow-up of probably benign lesions (eg. fibroadenomas, complicated cysts)
11. If ordered by referring clinician

Bilateral VS. Unilateral Ultrasound?

- If doctor has check marked/specified Unilateral breast ultrasound (e.g., only wrote “L breast US”, only do a unilateral ultrasound
- If referring doctor has not specified if unilateral or bilateral breast ultrasound, perform a bilateral breast ultrasound
- For women with axillary abnormalities/axillary lymphadenopathy suspected, a BILATERAL BREAST and AXILLARY ultrasound should be performed (since differential diagnosis depends on whether axillary lymphadenopathy is unilateral vs bilateral, which can affect whether suspected cause is primary breast pathology vs. systemic pathology (such as lymphoma). Bill only as Bilateral Breast and axillary ultrasound exam (J127 Bilateral only; do not add on extra axillary J182).

Breast Ultrasound Protocol:

1. **Review with mammography technologist or radiologist the mammographic abnormalities/areas to target** prior to starting ultrasound (if at True North Imaging clinic site with mammography available and *both mammogram and ultrasound ordered*, **mammogram should always be performed PRIOR to the ultrasound for women ages 30+).**

2. **Review prior ultrasound reports** and at least most recent breast **ultrasound images**, so that you become familiar with the appearance of the abnormalities in this patient/ area to target (e.g., morphology, depth within the breast, appearance of surrounding tissue, "*to know what you're looking for*")
3. If a patient has a clinical concern, **document on tech sheet clinical details** (e.g., Hard lump? Present for years? New? Associated features such as skin puckering/tethering? Bloody or clear nipple discharge? Focal pain? vs. bilateral diffuse breast pain? Family history of breast or ovarian cancer? i.e., *why is this patient here?)*
4. Scanning Technique – scan in **SAGITTAL** & **TRANSVERSE** using a systematic technique to cover whole breast (or alternatively RADIAL & ANTI-RADIAL)
5. *Always scan/sweep using **Harmonics** if on a GE machine to increase detection (Harmonics Imaging automatically on for Toshiba machines)*
6. If completely negative ultrasound, document:
   a. images for Each Quadrant,
   b. Retroareolar,
   c. Axilla on each side
   d. (i.e., 12 images minimum for a negative bilateral US. You usually should save more images to PACS to document/demonstrate the background breast parenchymal echotexture to radiologist)

For all abnormalities/lesions, document with appropriate labeling:

- Left, Right
- Clockface
- Distance from nipple
- Trans/Sag vs Radial/Anti-radial – Probe Orientation
- Measure in 3 dimensions, including the longest lesion dimension. *e.g., L, 2:00, 4CMFN, Trans* (no need to measure depth from skin unless performing a biopsy)

**** DOCUMENT THE AREA OF CONCERN/LUMP on *images* ****

- label as AOC on images

Save at least 5 images in each dimension (5 trans & 5 sag images) of AOC to document you imaged the concerning region clinically, or Area being followed from last ultrasound

Document Lesion MARGINS well

- Circumscribed vs. Non-circumscribed
  (e.g., Spiculated, Microlobulated, Indistinct, Angular)

Make sure that you demonstrate the MOST suspicious features well (i.e. if some margins are circumscribed but some are spiculated with taller-than-wide orientation, show the suspicious areas well)

- Apply **POWER DOPPLER**
  (more sensitive at detecting presence of vascularity than colour Doppler)
  If you see positive Power or Colour Doppler signal:

Confirm true vascularity by obtaining **PULSE WAVE DOPPLER TRACING**

- Be mindful of your technique:
  Patient Positioning (**Supine Oblique** to look at outer breast; **Arm up to see axilla** well with adequate probe pressure to push axillary fat out of the way or to flatten a thin concave axilla)

- Optimize **Focal Zone** (not too much lung), **Focal depth**, Gain for pre mammary fat as '**medium gray'**

- Use **adequate probe pressure** (to help distinguish benign/normal shadowing eg. Cooper's ligaments & fibrocystic change from Pathologic shadowing eg. invasive lobular cancer associated with a lump)

- **Stand-off pad** or lots of gel for superficial lesions

- remember the **axillary tail** (a common blindspot) and **axilla**

Please also refer to:
True North Imaging *Intranet Website Portal under "Training" for pdfs of:*
True North Imaging *CME PowerPoint presentations on Breast Ultrasound Protocols –Part 1 & 2*
Breast Ultrasound ACRIN6666 Trial Breast Ultrasound Training Cases
Reviews BI-RADS criteria, and which ultrasound features are benign vs suspicious

***True North Imaging Breast Imaging Protocols**, which covers protocols regarding bookings, mammography, breast ultrasound, quality assurance and outcomes analysis*

Appendices on:
Breast Ultrasound Preliminary Technologist Worksheet
True North Imaging *Patient Breast History Questionnaire*
ACR BI-RADS Lexicon for Breast Ultrasound and Mammography terms

BAKER'S CYST

1. The patient should be placed in a prone position with a small angle sponge or pad under the ankle of the leg being examined.
2. The tissues of the posterior leg should be imaged from the femoral condyles to the mid portion of the calf or full extension of the fluid collection, in a transverse plane.
3. Repeat in longitudinal plane demonstrating the entire popliteal fossa.
4. Careful documentation of the popliteal artery and vein must be included, watching the pulsations of the artery, and demonstrating augmentation of the vein following compression. Apply Colour Doppler if necessary.
5. If a Baker's cyst is detected separation of the mass from the popliteal vessels must be documented.
6. A Baker's Cyst will be a horse-shoe shaped fluid collection within the medial aspect of the popliteal fossa.

7. Must demonstrate neck extending into the knee joint between semimembranosus tendon and medial head of gastrocnemius muscle.

DUPLEX EVALUATION OF THE CAROTID ARTERIES

Images To Be Obtained:

1. Longitudinal scans of the entire common carotid artery (CCA) from its origin to and beyond the bifurcation. Velocities must be obtained from at least two levels.
2. Longitudinal scans of the internal carotid artery (ICA) from the bifurcation to its disappearance beyond the angle of the jaw. Velocities must be obtained from at least two levels.
3. Longitudinal scans of the external carotid artery (ECA) from the bifurcation to its disappearance beyond the angle of the jaw. Velocities must be obtained from at least one level.
4. Transverse scans of the entire common carotid artery.
5. Transverse scans at the bifurcation, bulb and both the internal and external carotid arteries as far as possible distally.
6. Longitudinal scans of the vertebral arteries (VA). Velocities must be obtained from at least one level.

Plaque Identification & Characterization:

1. In addition to routine images, additional images must be taken at any level where plaque is identified.
2. Magnification views of areas of plaque may be helpful.
3. Observations should be made as to the echogenicity, surface characteristics, homogenicity, the extent of narrowing of the lumen, the extent of the plaque along the course of the vessel, and location.

Documentation - General Considerations:

Doppler assessment of the vessels being examined should be made to determine the presence/absence, direction and velocity of flow, as well as the velocity waveform profile. Additionally, qualitative or quantitative assessments of blood flow turbulence must be made. Spectral analysis is always performed.

Sample Size:

1. The axial length of the sample size should be adjusted so that it is approximately _-½ the diameter of the vessel.
2. Sizes that are too small may limit the ability to determine the presence/absence of flow.
3. Sample sizes which are too large may produce slightly increased bandwidth measurements, and signal interference from adjacent vessels.

Doppler Flow Angle:

1. In general, the more parallel to flow the beam is, the better the Doppler signals will be. It is commonly necessary, however, to use angles which are more perpendicular to flow. This may be due to the course of the vessel, or it may be necessary to reduce problems associated with signal aliasing.

2. The beam to flow angle should ideally be less than 60°. In cases where tortuous vessels are encountered, the beam angle may be increased to a maximum of 70°. Spectral analysis of Doppler velocity signals above 70° are unreliable.

Doppler Recordings:

1. The routine Doppler examination should include, at minimum, samples obtained in each of the carotid vessels.
2. Additional samples must be recorded at any level in the vessel where plaque is identified proximal, within and distal to the plaque.
3. Doppler readings of the vertebral and orbital directional Doppler are done routinely to document the direction of flow.
4. Calculate velocity ratio: $\frac{\text{ICA Peak Systolic Velocity}}{\text{CCA Peak Systolic Velocity}}$

Stenosis Measurements:

1. At any area where a stenosis is demonstrated, velocity recordings should be obtained just proximal to the stenosis, at the point of maximum stenosis, and immediately distal to the stenosis.
2. If calcified plaque interferes with the ability to obtain Doppler signals at the point of suspected stenosis, the transducer position on the neck should be readjusted to attempt to position the beam so that the shadowing does not obscure the Doppler signal. Positioning the transducer Caudad or Cephalad to the plaque and directing the beam more parallel to the vessel may also aid in obtaining usable Doppler signals for stenosis measurement by spectral analysis.

Suspected Occlusion - Techniques to avoid false positive diagnosis of occlusion:

1. Increase the sample size to at least the diameter of the vessel.
2. Increase the Doppler gain until background noise is barely heard.
3. Sample at multiple areas within the vessel. Lack of signal may be due to interference from calcified plaque. **Demonstration of flow immediately distal in the vessel precludes the diagnosis of complete occlusion.**
4. Obtain samples in the internal and external carotid arteries. These vessels may still be patent as a result of collateral flow even in the presence of common carotid artery occlusion. Apply Colour Doppler.

DOPPLER EVALUATION OF THE ARTERIES OF THE LOWER LIMBS

Vessels of Interest:

- Aorta
- Iliac Arteries (common and external when visualized)
- Femoral Arteries
- Popliteal Arteries
- Ankle Arteries

Doppler Recordings - General Principles:

Adjust the doppler angle to the vessel in the 55%-70% range by visual inspection to minimize noise and maximize the clearest signal.

The beam to flow angle should ideally be less than 60%. In cases where tortuous vessels are encountered, the beam angle may be increased to a maximum of 70°. Spectral analysis of Doppler velocity signals over 70% are unreliable.

Equipment Settings (DRF 400):

Transmit Power	8 dB
FFT	20 ms
High Pass Filter	200 Hz
Sample Volume	2.7 mm
Time Base	2 sec (or as required)
Frequency Window	as required

Aortoiliac Branches:

In the lower abdomen on either side of the midline, identify the aortic bifurcation and main pelvic branches (common and external iliac arteries). In the case of each vessel, using the equipment settings shown above, record peak velocities and perform spectral analysis.

Femoral/Popliteal Branches:

In each leg, identify the common femoral artery just above the level of the inguinal ligament (usually where it is most easily palpable). Using the equipment settings shown above, record peak velocities, and perform spectral analysis in the common femoral, profunda, superficial femoral and popliteal arteries.

ANKLE/ARM PRESSURES

STRESS: At the beginning of the examination, have the patient walk on a treadmill at 1.5 MPH and a 7.5% grade for five minutes or until symptoms force the patient to stop. If a treadmill is not available stairs will do. Immediately after exercise, return the patient to the table and record both ankle pressures (posterior tibial) and the left arm (brachial) pressure.

RELAXED: After the Doppler ultrasound examination then do your ankle and arm pressures again.

B SCAN EVALUATION OF THE LOWER LIMBS

a. Obtain images of the above-named vessels in the longitudinal and transverse planes. Note pulsatility.
b. Additional views should be taken at any level where plaque is identified.
c. Magnification views of areas of plaque may be helpful.
d. Observation should be made as to the echogenicity, surface characteristics, homogeneity, extent of narrowing of the lumen, and extent of plaque along the course of the vessel, and its location.

STENOSIS

In areas of accumulation of plaque where more than 30% of the lumen is compromised, measurements should be obtained in the longitudinal and transverse views, in order to identify the percent diameter stenosis, and residual lumen calculations.

QUALITY ASSURANCE
IN
ULTRASOUND

Revised July 2024
Reviewed April 2022
Reviewed March 2021
Reviewed December 2020
Reviewed March 2019
Reviewed October 2018
Revised December 2017
Revised April 2010
Reviewed July 2008
Revised January 2007
Revised December 2005
Reviewed December 2003
Revised October 2002
Reviewed 2000
Revised December 1998
Revised January 1, 1996
Reviewed April 1997

QUALITY ASSURANCE - ULTRASOUND

DAILY ULTRASOUND DUTIES

a. The ultrasound room must be kept clean and tidy at all times. Countertops should be free of extraneous clutter. All records pertaining to other patients should be out of sight.
b. Table paper must be changed between patients, and the probe must be wiped free of gel and cleaned with a disinfecting solution.
c. The garbage pail should be emptied prior to becoming overflowed.
d. At the end of the day the ultrasound unit should be cleaned as outlined in Routine Preventative Maintenance part A.

ROUTINE PREVENTIVE MAINTENANCE

The procedures described in this section are not hazardous to perform and can be accomplished easily. Failure to perform these tasks on a regular basis, however, can lead to costly repairs and increased down time.

a. *Ultrasound Machine and Probes:*
Please review the Infection Control manual for detailed information on the cleaning of the ultrasound machine and probes.

b. *Cable Check:*
Daily use causes mechanical stress to coaxial cables. Internal breaks in the center of the cable often cause intermittent malfunction. Intermittent malfunctions of this kind should be logged and reported to the area supervisor and, upon instruction, the service engineer.

Weekly inspection of all cables for signs of wear must be documented.

c. *Air Filters:*
Air Filters are removed and cleaned at time of service.

d. *Integrity of Enclosures:*
Doors and other openings on the equipment should be closed during routine operation. On some equipment, failure to close these openings causes dust to be sucked inside the machine and onto the electronics.

e. *Routine Preventive Maintenance:*
A preventive maintenance service call must be conducted yearly by the manufacturer, or another designated service person. All and any testing of the unit is performed at time of yearly PM. Any intermittent issues are dealt with through our service agreements with the manufacturer.

SONOHYSTEROGRAM SUPPLIES

Sonohysterogram supplies must be stored in a clean, dry area. When sonohysterogram supplies arrive they must be documented on the following chart (Saline, Catheters, Echovist). Please include the product identity, manufacturer's name, condition when received, lot number, date of receipt, date placed in service and expiration date. These records must be kept on file for 3 years. Any expired products must be disposed of.

SONOHYSTEROGRAM SUPPLY LOG

Product	Manuf.	Condition received	Lot number	Date received	Date put in service	Expiration date
example: Catheter	Cooks	Good	B10736	20/06/23	01/07/23	02/02/26

MAMMOGRAPHY PROCEDURES

Revised July 2024
Revised April 2022
Reviewed March 2021
Revised April 2019
Revised November 2017
Reviewed July 2015
Revised June 2013
Reviewed March 2012
Revised January 2010
Reviewed May 2009
Reviewed August 2008
Revised August 2007

MAMMOGRAPHY PROCEDURES

MAMMOGRAPHY PROCEDURES

1. *Ask the patient if he/she was given a requisition for the examination*:

The requisition is a "source document" which must accompany the file of all patients examined at the clinic. It must be filled out and signed by the referring doctor and must be scanned into RIS along with the tech worksheet that is stored for a minimum of ten years. **A complete requisition must include the patient's name and 1 other identifying factor, type of examination, and referring physician's signature.**

2. *If the patient does not have a requisition & the appointment was booked by the patient*:

You must call the referring doctor's office and obtain the necessary information and authorization. Fill out and sign a new requisition on behalf of the referring doctor or ask them to fax you a completed requisition. If the appointment was booked by the doctor's office and the patient forgot to bring in the requisition, then fill out a requisition form on behalf of the referring physician. If there is any doubt as to why the patient has been sent to the clinic, you must contact the referring physician before proceeding any further.

3. *Obtaining previous studies*:

Obtaining previous studies is paramount in the diagnosis of mammography. At True North Imaging we make every reasonable attempt to obtain previous mammogram films/images for comparison.

ALARA, As Low As Reasonably Achievable is a generic stance regarding radiation exposure, the goal of which is the least and lowest exposure possible and/or practicable, vis-à-vis licensed use of radioactive materials, the economics of improving nonradioactive technologies, the benefits to public health and safety, and other socioeconomic considerations.; The free dictionary.com

At TNI, the ALARA principle is applied at ALL examinations,

The potential benefits and risks of each examination is considered.

ALARA is observed when adjusting controls that affect the acoustic output and by considering both the transducer dwell time and overall scanning time for Sound Energy procedures (Diagnostic Ultrasound) as well as radiation and dose reduction for radiation related procedures (X-Ray, Bone Mineral Density &Mammography).

Practicing ALARA requires that users do all of the following for:

X-ray, BMD & Mammography:

Whenever possible, the application of ionizing radiation should be limited to anatomical area of concern using:

Time: Reducing exposure time, directly reduces radiation dose

Distance: increasing the distance between you and radiation source will reduce radiation exposure

Shielding: lead or lead equivalent shielding for X-rays and gamma rays is very effective in reducing radiation exposure. Utilization of specific anatomical shielding when appropriate

Collimation in Xray: whenever possible without omitting relevant anatomy

Revised 24/03/2025

Should you find a discrepancy in the previous report, please bring it to the attention of the radiologist. The radiologist will issue an addendum report if the previous was done in house. If it is an outside previous, the radiologist will contact the facility that it was performed at and inform them of the discrepancy.

4. *When booking a mammography appointment*:

Ask if the patient has ever had any previous breast imaging taken OR IF SHE HAS IMPLANTS. Ask the patient to bring her prior mammograms to her appointment, explaining that comparison views offer valuable diagnostic information. Please make sure to enter notes in the patient's file, as necessary.

5. *If it is not possible for the patient to retrieve the films/Images*:

Obtain the correct spelling of the patient's name – at the time of the previous examination, date of birth and clinic name with the telephone number where the previous films were taken. If the patient cannot remember, call the referring physician for details. Obtain verbal authorization from the patient to release the films to True North Imaging and sign the Undertaking Form on behalf of the patient. File this consent in the requisition bin under the patients' last name. Telephone the other facility and arrange for the films to be sent to your office; fax or mail the release form to them.

6. *When the patient arrives for their appointment*:

Have the patient sign and date the Undertaking Form. This form can now be scanned and saved in the patient's file.

7. *If the previous Mammograms are not received before the examination*:

Write a note in the patient's note/bag label in the RIS that previous studies have been requested. Assign mammograms temporarily to the PRIORS reporting list. Update the bag label note if/when PRIORS are received and reassign mammograms to the reporting radiologist assigned that day. An attempt should be made and documented to obtain a copy of the previous report as well prior to examining the patient.

8. *When the prior mammogram or ultrasound images are received*:

Import digital images to PACS or send film hard copy images to the radiologist for a comparison report. When returning the films to the original clinic, make a note of the date of return under notes in the patient's file.

Things To Know:

- It is the technologist and/or reception staff's responsibility to ensure that a reasonable attempt has been made to obtain the previous films, however, if priors are still unavailable after 10 business days of exam being performed, reassign mammograms to the reporting radiologist assigned that day.
- Have the patient fill out a mammography questionnaire at each visit, except if the patient is returning for short-term follow up additional views. The questionnaire must be reviewed by the Technologist prior to the examination.
- Mammography images must be kept for 10 years following the patient's last visit.

Revised 24/03/2025

PATIENT MAMMOGRAPHY INSTRUCTIONS

This examination requires firm compression to your breasts; therefore, you may experience discomfort during and after the procedure. You should not be alarmed if you develop temporary skin discolouration and mild aching as a result of the compression. The use of compression produces clearer images and reduces the amount of radiation received. It is a necessary part of the procedure.

You should understand that this does not damage breast tissue and produces no long-term effects.

Although modern mammography is the best single method for detecting cancer, it does not find all breast cancers. Therefore, your doctor may require you to have mammograms on more than one occasion.

Under certain circumstances, you may be required to have additional views taken or an ultrasound performed. This is sometimes necessary to assist the doctor in the diagnosis and does not mean that you have an abnormality.

SPECIAL NOTE:

- *Any woman who is pregnant, or who thinks she might be, must let her doctor and technologist know before proceeding with the examination.*
- *Any woman who is breastfeeding must advise the technologist prior to the examination.*

This breast questionnaire will help the doctor determine your risk level and read your mammogram and/or ultrasound
(If you have difficulty completing this form, the technologist can review and help you answer these questions)

Have you had a MAMMOGRAM before? Yes ____ No ____ **Breast ULTRASOUND before?** Yes _____ No _____
If yes: When & Where? (if not here) _____

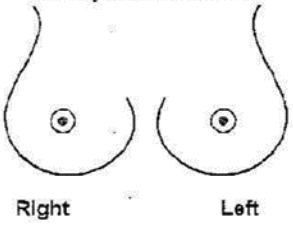
Currently PREGNANT? Yes ____ No ____
POSSIBILITY you may be pregnant? Yes ____ No ____ If Yes, Last period? _____
Currently BREASTFEEDING? Yes ____ No ____

Technologist Notes:

Is this a SCREENING mammogram ("routine check-up")? Yes ____ No ____
if NO, what SYMPTOMS are you are experiencing?

Symptoms	Right	Left	For how long?
LUMP (that you or your doctor can feel?)			
Breast Pain			
Nipple Discharge - if Yes, circle one: (**Bloody/brown**? Clear? Green/Yellow? Milky?)			
Other?			

Please label on the diagram where you are concerned



Have you had any of the following BREAST PROCEDURES?

Procedures	Right	Left	When?
Breast CANCER Surgery			
BENIGN Surgery (eg. Fibroadenoma, Cyst)			
BENIGN Needle Biopsy			
Breast Reduction			
Breast Implants? Silicone or Saline?			

Family History of BREAST Cancer: Yes ____ No ____
If yes, please indicate AGE when diagnosed.
Mother_____ Sister_____ Daughter_____ Other _____

Family History of OVARIAN Cancer: Yes ____ No ____
Mother_____ Sister_____ Daughter_____
Have YOU had ovarian Cancer? Yes ____ No ____

Recent Vaccine in your Arm? (eg. Flu shot, Shingles, or COVID-19 vaccine in the past 4 months) Yes ____ No ____
If Yes, which Arm? Left ____ or Right ____ Approximate Date: _____
(We ask since some individuals develop temporary swelling in axillary/armpit lymph nodes as their immune system develops antibodies in response to vaccines, and this information helps your radiologist interpret your mammogram and/or breast ultrasound)

In the event of an abnormality, I give True North Imaging permission to request follow-up information from my physician/health facilities:

Patient Signature: _____ **Date:** _____

Complete this section ONLY If you are 50-74 years old **AND** *HAVE NOT HAD A MAMMOGRAM AT OUR CLINIC BEFORE:*

Age of first period: _____ Ever been Pregnant? Yes ___ or No ____ If Yes: # of pregnancies? ____ Age at first birth: ____
If last period more than 12 months ago, How old were you when periods stopped? _____
Did they stop: Naturally? Yes ____ or No ____ or, Due to surgery (uterus, ovaries removed)? Yes ____ or No ____
Are you CURRENTLY on Hormone Replacement Therapy (Estrogen Use)? Yes ____ or No ____
Ever had radiation therapy to the chest before age 30? (eg for lymphoma treatment) Yes ____ or No ____

GUIDELINES FOR THE PERFORMANCE OF MAMMOGRAPHY

1. Collimation should not be used on routine mammography views.

2. All films must be identified with the correct positioning markers, located on the axillary side for the "cc" views, and must meet approved standards for content, i.e., right is indicated by "R", left by "L", and the views abbreviated. This is done automatically by the Hologic Selenia unit once a view is selected.

3. Skin markers are to be used to indicate the location of skin tags or scars on all views. They are also to be used to indicate the location of palpable masses.

    a. Nipple markers must be used.

4. Criteria for acceptable positioning.

MAMMOGRAPHY POSITIONING GUIDELINES

To ensure that the maximum amount of tissue is visualized on the cc view:

1. The distance from the nipple to the pectoral muscle should be equal to or less than 1 cm to that of the MLO (using the nipple line).
2. If no pectoral muscle is seen on the film, then the distance to the edge of the film should be taken.

$$b\text{-}a \leq 1 \text{ cm}$$

A good MLO will display the following:

1. The pectoral shadow should be convex or straight
2. The pectoral shadow should be at or below the nipple line (in a line perpendicular to the pectoral muscle)
3. The inframammary margin should not sag

RECOMMENDED VIEWS FOR MAMMOGRAPHY

SCREENING MAMMOGRAMS *(no problems/concerns, no pain, no lumps)*:

Over age 30 years: Do Bilateral CC and MLO views

Age 30 years and under: All patients are to have a breast ultrasound either before or after the mammogram, whether it was ordered on the requisition or not.

If a mammogram has been ordered by the referring doctor it is to be done, however, limited views are to be performed. Do bilateral MLO views only, unless otherwise instructed by a radiologist.

DIAGNOSTIC MAMMOGRAMS *(clinical problems/concerns, pain, lumps, etc.)*:

Over age 30 years: Do bilateral CC and MLO views
Work up/coned/magnification views as necessary
Ultrasound of affected side(s) (for breast lumps,
Asymmetry/mass, or if ordered on requisition)
Age 30 years and under: For Breast Pain: Do bilateral MLO and CC views
Ultrasound of affected side(s) only, as ordered on the requisition
For Breast lumps: Do bilateral MLO and CC views
Work up/coned/magnification views if necessary.
Ultrasound of affected side(s) (whether it was ordered on
the requisition or not)

MASTECTOMIES:

Previous Unilateral Mastectomy:

CC & MLO views of the unaffected breast. No views of the mastectomy side unless specific clinical concern

Previous Bilateral Mastectomy: No mammogram unless specific clinical concern

Microcalcifications: Routine straight lateral (i.e. 90 degree true lateral) and CC & lateral Magnification views

Implants: Bilateral routine CC & MLO views
Bilateral CC & MLO Implant Displaced views (Eklund views)
+/- Bilateral breast ultrasound (only if ordered by referring clinician)
For patients with firm encapsulations, as determined by
referring physician or technologist, a 90 degree true lateral
is to be included

Film Marking: BB marker(s) should be used to identify lumps/area of concernSoft, compressible moles and skin tags do not have to be marked on the original films, however, a note must be made of them, along with their locations, on the patients questionnaire.

If these lesions appear to be causing a questionable density on the image, then they should be marked on original and subsequent exams. Scars should be marked with bendable wire markers. Anytime a marker is used, the technologist must indicate what is being marked (i.e. mole, scar, etc.)

BREAST ULTRASOUND:

The indications for breast ultrasound include (but limited to the evaluation of:

A palpable lump or area of clinical concern, as indicated by either the referring physician and/or the patient.

- A focal suspicious mammographic finding
- Dense breasts, where there is marked asymmetry or
- clinical suspicion (if ordered by the referring clinician,
- and/or deemed appropriate by the radiologist).
- A young patient in whom a complete mammogram may be necessary.
- Evaluation of implants.

Male Patients: Same routine 4 views, with any necessary work up.

Rechecks (3, 6, or 9 months): Refer to previous report and do as requested in the OPINION: If not specified repeat affected side as per the previous report or call a radiologist for clarification.

Nipple Discharge: A magnification view of the retroareolar area should be obtained in a 90-degree true lateral position.

True Lateral Views: If a lump is seen on only one view do a 90 degree true lateral view.

Coned Compression/ Magnification views: Use two views with the clearest visualization of the lesion. Are to be conducted as per protocol for breast lumps, asymmetrical densities, irregular calcifications, etc.

TECHNOLOGIST PRELIMINARY OBSERVATION WORKSHEET

****THIS EXAMINATION HAS NOT BEEN REVIEWED BY A RADIOLOGIST****

Breast Ultrasound **Tech initials: _____**

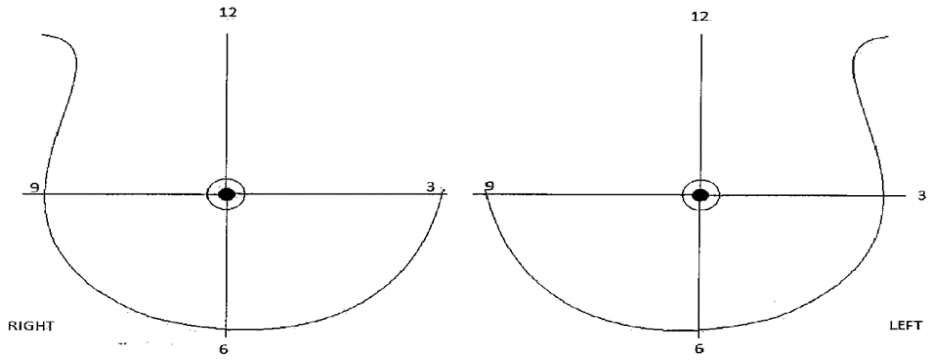
PATIENT DEMOGRAPHICS

Referring Physician: _____

CLINICAL HISTORY: _____

_____

_____



Right:	Left:

<u>Document Area of Concern on Images well (& label AOC);</u> Show lesion MARGINS well. 3 Dimension measurements; Label Clock face/Distance from Nipple/Trans+Sag; Pulse wave Doppler tracing if (+) Doppler signal; Compare to Previous.

MAMMOGRAPHY PHOTOTIMER TECHNIQUE CHART

Compressed Breast Thickness	Fatty Breast				50% Fatty-50% Dense				Dense Breast			
	Target	Filter	Kvp	Density	Target	Filter	Kvp	Density	Target	Filter	Kvp	Density
< 3 cm	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0
3 to 5 cm	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0
5 to 7 cm	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0
> 7 cm	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0	W or Ag	Auto	Auto	0

Techniques based upon proper photocell placement under the densest portion of the breast, screen-film combinations, and processing.

Taut compression should be used for all patients except where noted.

Focal spot size for:

Non-magnification Technique: .3 mm

Magnification Technique: .1 mm

Special Techniques

Implant Displaced Views

Photo timing same as above chart

Conventional Imaging

Thickness (cm	kV	mAs	Filter
Less than 4 cm	28	100	Rh
4 cm to < 6 cm	28	120	Rh
6 cm to < 8 cm	28	150	Rh
8 cm to 10 cm	28	150	Rh
More than 10 cm	28	180	Rh

Tomosynthesis Imaging

Thickness (cm)	kV	mAs	Filter
Less than 4 cm	29	60	Al
4 cm to <6 cm	31	70	Al
6 cm to <8 cm	33	90	Al
8 cm to 10 cm	35	100	Al
More than 10 cm	38	100	Al

WE

COMPRESS

BECAUSE

WE

CARE

MAMMOGRAPHY OUTCOME ANALYSIS PROGRAM

Introduction:

True North Imaging has always strived to receive feedback from referring physicians relating to any and all cases. For accreditation purposes, True North Imaging has developed a formal outcome analysis program.

In order for the program to be a success, all mammography technologists must be aware of the necessary information.

Data is to be broken down into two age samples:

1. Women < 50 years of age
2. Women 50+ years of age

The results are to be categorized as:

1. Positive Findings
2. Biopsy Results

Referring Physician Letter & Pathology Form Letter:

In a binder, keep a log of all positive findings along with all of the positive reports. Approximately 3 months after the positive report was sent to the referring physician an introductory package which includes MP12 & MP13 plus a copy of the patient's report must be sent also. (Include a self-addressed stamped envelope for the doctor to return the information relating to the patient's follow up). This letter explains the requirement and the procedure. It also gives the referring physician the option of participating or not.

For subsequent positive findings, send a copy of the patient's report and the Pathology Form Letter (MP13).

Mammography Outcome Logs:

All positive findings must be logged on the Outcome Analysis Log Sheets (MP14 - MP17).

Prior to sending a letter to the referring physician, the technologist must refer to the patient's mammography questionnaire.

On a monthly basis, review which Pathology Form Letters (MP12) need to be sent to the referring physicians that have indicated their willingness to participate. These results must be logged. Verify that the patient has consented for us to obtain follow-up information in the event of a positive finding.

Outcome Analysis:

Results are to be tabulated quarterly on the Analysis Statistics Sheet (MP18). Categories to be included in the quarterly statistics are to be separated into the two age samples and should include:

- number of cancers detected
- number of false positives
- number of false negatives

The total number of mammography patients per age group is also to be tabulated so that the results may be expressed in percentages.

CLINIC LETTERHEAD

Date: _____

Dear Dr. _____

It gives me great pleasure to announce that our <insert clinic name> has received a full accreditation from the Canadian Association of Radiologists Mammography accreditation program. (note: this section to be used by clinics that have received accreditation)

The CAR recommends that accredited facilities adopt a mechanism for follow-up of mammography findings. As well, The College of Physicians and Surgeons now requires all health facilities performing mammography to maintain a professional quality assurance program.

While we have always strived to receive feedback, in compliance with these bodies, our office will be implementing a more formal method of outcome analysis. Periodically, follow-up questionnaires will be forwarded to your office for patients that have had a positive finding, given that the patient has given us consent to request the information. A copy of the questionnaire is enclosed for your review. We ask that the questionnaire be completed and returned at your earliest convenience.

We would also appreciate hearing any other findings that you feel are relevant.

If you do not wish to participate in an outcome analysis program, please indicate your request and return this letter to our office. Once received, patient questionnaires will not be forwarded.

I do not wish to participate in an outcome analysis program _____

I do wish to participate in an outcome analysis program _____

Please do not hesitate to contact me if you have any questions or concerns regarding this matter.

Yours truly,

<Name of Quality Advisor>
Mammography Quality Advisor
<Name of Clinic>

CLINIC LETTERHEAD

DATE: _____

DEAR DR. _____

The College of Physicians and Surgeons requires that all health facilities performing mammography maintain a professional quality assurance program. This includes the establishment of a system to review outcome data for all positive findings.

In addition to the regulatory bodies, we at True North Imaging feel that this is a valuable learning tool and have, in the past, tried to obtain the information. Through this letter we have attempted to standardize the collection process and in doing so, to minimize the time investment and disruption to your office.

On _____ a patient (_____, case #_____) referred to by you, was seen at our office. Our records indicate that a positive finding was reported.

Has there been additional follow up? Yes _____ No _____

If yes, what was the nature of the follow up? _____

_____

_____

Was a biopsy performed? Yes _____ No _____

If yes, what was the result of the biopsy? _____

_____

_____

Do you have any additional comments?_____

_____

Thank you for your time and consideration.

Sincerely

<Name of Mammography Quality Advisor>
Mammography Quality Advisor, True North Imaging

Outcome Analysis Log Sheet

Positive Findings – Patients 50+ years of age

CASE #	DATE LETTER SENT	DATE RESPONSE RECEIVED	RESULTS LOGGED	PALPABLE OR OCCULT
TOTALS:				

Outcome Analysis Log Sheet

Positive Findings - <50 years of age

CASE #	DATE LETTER SENT	DATE RESPONSE RECEIVED	RESULTS LOGGED	PALPABLE OR OCCULT
TOTALS:				

Outcome Analysis Log Sheet

Biopsy - Patients 50+ years of age

CASE #	DATE LETTER SENT	DATE RESPONSE RECEIVED	RESULTS LOGGED	PALPABLE OR OCCULT
TOTALS:				

Outcome Analysis Log Sheets

Biopsy – Patients <50 years of age

CASE #	DATE LETTER SENT	DATE RESPONSE RECEIVED	RESULTS LOGGED	PALPABLE OR OCCULT
TOTALS:				

QUARTERLY MAMMOGRAPHY OUTCOME ANALYSIS STATISTICS

For the time period: _____

Patients 50+ years of age:

Number of cancers detected: _____

Number of false positives: _____

Number of false negatives: _____

Patients <50 years of age:

Number of cancers detected: _____

Number of false positives: _____

Number of false negatives: _____

Totals:

Total number of mammography patients: _____

Number of cancers detected: _____ expressed as a percentage of total patients: ____%

Number of false positives: _____ expressed as a percentage of total patients: ____%

Number of false negatives: _____ expressed as a percentage of total patients: ____%

DIGITAL MAMMOGRAPHY

QUALITY ASSURANCE/QUALITY CONTROL

Revised May 2021 Revised September 2024

DIGITAL MAMMOGRAPHY
QUALITY ASSURANCE/QUALITY CONTROL

INTRODUCTION

This document lists the quality control (QC) procedures, their frequencies, and action limits that should be used for clinical Digital Mammography (DM) systems used in the Ontario Breast Screening Program. DM includes systems previously identified as: Full-Field Digital Mammography (FFDM), and digital radiography (DR). All QC procedures listed here must be performed at the required intervals or more frequently if the individual situation dictates. The comprehensive set of tests in this manual are those required by the OBSP and are intended to be performed in a standardized manner so that the results can be compared across machines and facilities.

These tests must be done by all OBSP sites to maintain accreditation. Some manufacturers have QC tests in their manuals which are similar to tests in this manual; since those tests provide essentially the same information, those manufacturer's QC tests do not need to be performed by the site to maintain CAR accreditation. There are also some manufacturer specific tests which a site could perform in addition to the OBSP required tests, and additional tests that must be done in order to use the equipment, but those are not required by OBSP. The site should continue to perform any additional manufacturer tests that are ***required*** for their unit to ensure it stays correctly calibrated and does not void the manufacturer's warranty. If you are confused about which tests are necessary, please consult with your physicist and applications training or service person.

This QC Manual for the mammographic technologist has procedures with frequencies ranging from daily to semi-annually. There is also a Medical Physicist's Manual which has tests that are to be performed upon installation, annually or when significant changes or repairs have been made to the unit. The site is responsible for notifying OBSP when changes or repairs are made to the unit.

The data charts used to record test results are provided in this manual in paper form.

The tests described in this manual are designed to verify the correct operation of the entire imaging chain by evaluating the three components of digital mammography systems: image acquisition (x-ray generation and detection, flat-field correction), image processing (dynamic range adjustment, sharpening, peripheral equalization), and image display (gray-scale calibration and display resolution for both monitors/softcopy and printed/hardcopy images). When problems are detected, further tests may be required to diagnose and isolate the cause of the problems so that they can be corrected. Depending on the resources available at the facility and the nature of the problems, such diagnostic testing may be performed by the quality control technologist, the facility's medical physicist, equipment service personnel, or other suitably trained and qualified personnel.

The mammographic technologist must understand that the CAR accreditation requirements require the medical physicist to either perform a mammography equipment evaluation "whenever a new unit or processor is installed, a unit or processor is disassembled and reassembled at the same or a new location, or major components of a mammography unit or processor equipment are changed or repaired", or to review the results of the testing performed by another qualified individual. This includes the replacement of detectors, as well as moving the machine from one room to another. For new mammography units, this

equipment evaluation is essentially an “acceptance test” and involves more complete testing and evaluation than that required for the annual survey.

All tests must pass before the equipment may be used for the mammography of clients and in order to comply with HARP Regulations, **the report must be sent by the facility within 60 days of the test to:**

Ministry of Health and Long-term Care
Performance Improvement and Compliance Branch
1075 Bay St., 11th Floor
Toronto ON M5S 2B1

As in screen-film mammography, DM QC is only effective if the procedures are performed correctly, results are charted and compared to previous results and to test limits **as data are collected**, and appropriate corrective actions are taken when needed. QC is ineffective if procedures are not performed regularly, if tests are performed but results are not charted, or if the charted results are not reviewed carefully to determine if corrective actions are needed. To aid in recognizing when corrective actions should be taken, specific test or action limits are given for all QC test results.

Some tests specify that corrective action must be taken immediately; this means that the device must not be used for clients until the problem is corrected. For example, if corrective action must be taken immediately on a review workstation, the interpreting physicians (radiologists) may not use it for interpretation until the problem is satisfactorily repaired. However, the facility is not required to immediately cease mammography; they may continue to acquire client images for a reasonable length of time. In this example, a “reasonable length of time” would be 3 working days since acceptable medical practice involves notifying health care providers of positive examinations as soon as possible (as guidance, within 3 business days).

Images are generally provided to PACS systems in a “For Presentation” or “processed” form. Some of the tests in this quality control program require images in the “For Processing” or “raw” format. In order to properly evaluate signal levels and noise in the system using phantoms, edge enhancement and dynamic range compression (thickness equalization) must not be applied to the images.

TEST FREQUENCIES

The frequency of tests specified in this manual is the minimum frequency. The actual frequency that the QC tests should be conducted may vary with factors such as the age and stability of the imaging equipment and the number of problems being encountered.

The frequency of the tests may be modified in consultation with the consulting medical physicist. It may be prudent to increase the frequency of the tests if problems are frequently detected.

NOTE: If problems are seldom detected, DO NOT discontinue testing or reduce the frequencies below the OBSP/CAR minimums for any of the tests in the quality control program! The lack of problems indicates that the process is "in control" at the present time but does not predict the stability of the process in the future.

Table 1: Quality control tests to be performed by the Radiologic Technologist on Selenia Dimensions and 3-Dimensions DM and BT Systems

Quality Control Test	Frequency	Action Criteria
DICOM Printer Quality Control	Weekly	Category B
Detector Flat Field Calibration	Weekly	Category A
Artifact Evaluation	Weekly	Category C
Phantom Image	Weekly	Category A
Signal-To-Noise and Contrast-To-Noise Measurements	Weekly	Category A
Compression Thickness Indicator (fast compression test)	Biweekly	Category C
Diagnostic Review Workstation Quality Control	Weekly	Category B
Viewboxes and Viewing Conditions	Weekly	Category B
Visual Checklist	Monthly	Category C
Repeat/Reject Analysis	Quarterly	Category C
Compression	Semiannually	Category A
SDNR Phantom	Weekly	Category A
Flatfield Image	Daily	Category A

Action Criteria:

Category A: If any of the following quality control tests that evaluate the performance of the image acquisition components of the system produces results that fall outside the action limits as specified by the manufacturer, the source of the problem must be identified and corrective action must be taken before any further examinations are performed.

Category B: If any of the following quality control tests that evaluate the performance of a diagnostic device used for mammographic image interpretation (i.e. DICOM printer, physician's review station) produces results that fall outside the action limits as specified by the manufacturer, the source of the problem must be identified and corrective action must be taken before that device can be used for mammographic image interpretation. Clinical imaging can be continued and alternative approved diagnostic devices must be used for mammographic image interpretation.

Category C: If any of the following quality control tests that evaluate the performance of components other than the digital image receptor or the diagnostic devices used for mammographic image interpretation produces results that fall outside the action limits as specified by the manufacturer, the source of the problem must be identified and corrective action must be taken within thirty days of the test date. Clinical imaging and mammographic image interpretation can be continued during this period.

QC TEST IMAGES – SUGGESTED NAMES AND CLIENT ID

Client ID numbers assigned to the test images should be chosen so they fall outside the range used for imaging real clients. This is done to avoid difficulties with any PACS, radiology information system (RIS) or health information system (HIS) in use. The numbers assigned should also be unique to each test. (e.i. KV00000, TH00000, BR00000, etc)

CHANGES TO THE MAMMOGRAPHIC IMAGING SYSTEM

To comply with CAR Accreditation requirements, all changes to the imaging system that might affect image quality must be done in consultation with the medical physicist for your site and must be reported to both the OBSP Regional Administration and the CAR office when completed.

Specifically, if new equipment is installed, the mammography machine is moved, the X-ray tube is replaced, the detector is replaced or the image processing (software) is changed, these items must be discussed, and may require additional tests to be performed. If site personnel change (radiologists and technologists) this must also be reported to the CAR office (this is a CAR requirement, not the OBSP's).

Following this section, **Table 2** details some specific changes and the associated requirements.

In general, for any proposed change(s):

Contact the OBSP Regional Administration and the OBSP Physics Consulting Group to notify them of the proposed change(s) before they are implemented. Additional testing and/or

submission of phantom images, flat-field images and processor sensitometry may be required. For major changes, or new installations, a physics visit must be scheduled. Note that while rush visits are possible to arrange, frequent visits to other facilities have been scheduled, and rush visits may not be possible. There will be a delay before the facility can image patients.

Contact CCO, screening@cancercare.on.ca and the CAR and notify them of the change(s). The CAR will inform the centre as to what is required in order to maintain CAR accreditation. In most cases, an accredited facility will be required to submit their most recent QC chart and a phantom image (both from the same month), to ensure that the same high level of quality that was originally demonstrated at the time of accreditation has been maintained following the change.

Additional Information:

1. Clinical as well as phantom images must be submitted when the unit is changed.
2. Clinical images are not necessarily required for changes in grid, equipment location, or a tube replacement.
3. Physicist's reports submitted to the CAR must be signed by a physicist accredited in Mammographic Physics by the Canadian College of Physicists in Medicine.

Table 2: Required Action for Specific Changes to the Imaging System

Changes to the Imaging System				
Proposed Change	**Step 1**	**Step 2**	**CAR Fee***	
	Notify OBSP Physics of the proposed change(s) prior to implementation	Notify the CAR of the change	With a physicist's report	Without a physicist's report
Replacement X-ray Tube	the service personnel installing the tube will complete HARP testing; However, the physicist must be consulted prior to installation and may either: - **Visit** the centre to perform tests of their own, OR - Request a copy of the **service report** along with **phantom** images to evaluate and **dose** information.	Phantom image & QC data (with a physicist's report) Phantom image, Dose & QC data (without a physicist's report)	**$210.00**	**$210.00**
Replacement Grid or Replacement Detector	Physics may request: - **Phantom and flat-field images** after the installation and **dose** information. If so, a follow-up report will be issued to the site after the images have been evaluated, OR - Regular 6 month testing may be arranged to coincide with the replacement. The new grid can be evaluated at that time.	Phantom image & QC data (with a physicist's report) Phantom image, Dose & QC data (without a physicist's report)	**$210.00**	**$210.00**

*** The fees charged by CAR were current at the time of printing. Always check with CAR for current fees.*

Changes to the Imaging System				
Proposed Change	**Step 1**	**Step 2**	**CAR Fee***	
	Notify OBSP Physics of the proposed change(s) prior to implementation	Notify the CAR of the change	With a physicist's report	Without a physicist's report
Replacement Image Processing Software or Algorithm	Physics may request: - **Processed phantom image(s)** after the installation. If so, a follow-up report will be issued to the site after the image(s) have been evaluated OR - Regular 6 month testing may be arranged to coincide with the replacement. The new software can be evaluated at that time.	N/A	**N/A**	**N/A**

Replacement Monitor(s) for Radiologist's Review Workstation or Technologist's Acquisition Workstation	Physics may request: - **Installation Report** and **Monitor QC** after the installation demonstrating that the monitors are calibrated to meet OBSP requirements (DICOM GSDF) OR - Regular 6 month testing may be arranged to coincide with the replacement. The new software can be evaluated at that time	N/A	**N/A**	**N/A**
Changes to the Imaging System				
Proposed Change	**Step 1**	**Step 2**	**CAR Fee***	
	Notify OBSP Physics of the proposed change(s) prior to implementation	Notify the CAR of the change	With a physicist's report	Without a physicist's report
New Printer	Physics may request: - **AAPMTG18 test image and uniform test image,** as well as **printer sensitometry** after the installation. A follow-up report will be issued after these materials are reviewed; OR - Regular 6 month testing may be arranged to coincide with the replacement. The new software can be evaluated at that time	Phantom image & Printer QC data	**N/A**	**N/A**

Moving an Existing Unit	- **Acceptance Testing** by a physicist (refer to Page 4) is required when a new unit is acquired by a centre, or an existing unit is relocated. This is required by HARP, CAR and OBSP, and is covered by OBSP Physics. Physics will issue a report to the centre including the results of the acceptance testing - The results of the Acceptance Testing must be **submitted to the HARP Commission** within 60 days of the installation (and/or set-up after a move) of the new unit(s). - The report, including entrance exposure for the average client, must be kept on site in the quality control log.	For relocating an existing unit, the CAR requires an **application** be made to register the unit (Full clinical image submission is not required).	**$210.00**	**$210.00**
New Unit		For a new unit, the CAR requires an **application** be made to register the unit, including full phantom and clinical image submission	**N/A**	**$2100.00**
A New or Recalibrated Densitometer (for sites printing images)	There is no specific requirement for testing; However, this will affect the film laser printer QC program that was initially established. It will be necessary to **re-establish the baseline operating levels** for the film laser printer (refer to Section III.2.3.B.)		**N/A**	
New Dosimeter	Contact CAR if a site images the dosimeter incorrectly or damages it in some way and it cannot be imaged and used, but it must be replaced		**$157.50**	
Lost Dosimeter	Contact CAR if a site loses the dosimeter and needs to replace it for imaging.		**$78.75**	

Changes to Personnel: New Radiologist One New Technologist All Technologists	*This is a CAR requirement, not the OBSP's; however, the Regional OBSP Administrator should be notified. ----------> ----------> ---------->	Changes to personnel must be reported to the CAR and require the following: Change Form & Curriculum Vitae (40 hours) & C-MAP Copy of license & CME Clinical Images, Copies of licenses & CME	 **N/A** **N/A** **N/A**	 **N/A** **N/A** **N/A**

MAMMOGRAPHY QC TEST IMAGE AND RECORD RETENTION

As with screen-film mammography QC, the medical physicist will review the facility's DM QC data, including test results and images during their annual inspection. **Table 3** summarizes the length of time these records must be maintained at the facility.

HARP regulations require that QC records be "maintained for at least six years from the time of their making in the facility in which the x-ray machine to which the records referred is operated". These records must include type and result of test, frequency of testing and actions taken to correct each deficiency identified, but do not include the actual images.

Table 3: OBSP Requirements for Mammography QC Test Image Retention

QC Images/Records	Retention
Daily QC	Images – previous 60 days
Weekly QC	Previous 12 weeks
Monthly QC	Until the next semi-annual inspection has been completed and it has been determined that the facility is in compliance with the quality assurance requirements.
Quarterly QC	Until the next semi-annual inspection has been completed and it has been determined that the facility is in compliance with the quality assurance requirements.

Semi-annual QC tests	Until the next semi-annual inspection has been completed and it has been determined that the facility is in compliance with the quality assurance requirements or until the test has been performed two additional times at the required frequency, whichever is longer.
Mammography Equipment Evaluations	Images documenting test failures be provided to the facility to assist them in making corrective actions. These should be kept for 12 months.
CAR Requirements	All QC images must be kept on PACS for 1 year All QC records must be kept for 5 years

X-RAY SAFETY POLICY & PROCEDURES

This policy will be periodically reviewed and updated. The Mammography Technologist must be registered with the CMRITO.

The entire QC manual must be reviewed by each technologist and radiologist annually and when:

- they are newly hired
- a new revision of the OBSP QC Manual is published and distributed

A Radiation Protection officer must be designated for the facility. This person must be a radiologist and is normally the radiologist for the centre.

A technique chart must be posted. Most centres will use Automatic Exposure control and Automatic kVp for nearly all patients. If manual kVp is used, 28 or 29 kVp is recommended for use with the average patient, increasing to 32 kVp for very dense or thick breasts. The radiographic technique as well as compression thickness must be recorded either in the image header, or on the client's mammography record sheet.

Views:

For Screening, bilateral Craniocaudal and bilateral mediolateral oblique views will be taken unless otherwise indicated. The nipple is to be in profile in at least one view for each breast if possible. Nipple markers may be used but are not required. (see mammography procedures section in Policy & Procedure manual for more specified views)

Consent:

A signed consent for the procedure is not required by the program. However, signed consent is required on the TNI OBSP questionnaire – "In the event of a positive finding I give TNI permission to request follow up from my physician/health facilities.

X-ray shielding devices are not required for patient protection; however they can be used to allay fear of radiation exposure.

The table acts as a complete beamstop and does not permit any primary radiation to hit the client behind it. Scatter from the surface of the breast is minimal (less than 1/1000) of the entrance exposure and radiation at 30 kVp has much less penetration than that normally used for general radiography. The exposure to the thyroid is extremely small (less than .03 mGy for a 4 view study). The average glandular dose to the breast for a 4 view study is about 3 mGy for the average client.

An overexposure is defined as:

An examination in which the entire breast tissue is over-penetrated and the mAs have exceeded 600 at 28 kVp. Double exposures due to equipment failure may cause this.

When overexposure occurs:

- Inform Radiation Protection Officer.
- Before imaging another client, determine the cause of the problem and if it requires repair, re-book all clients until the problem is corrected.

Exam Room:

The door of the mammography room must be closed during exposure.

The door must have a warning sign stating, "*Unauthorized Entry Prohibited*" and have an automatic door closer as required in HARP regulations.

OBSP Quality control manual(s):

A copy of the OBSP Quality control manual(s) must be kept in the technologists' work area, and all tests must be carried out when required and recorded in the manual. A record of the acceptance tests and 6-month checks is to be kept in the same location. The manual and records may be maintained either in hard or soft copy.

HARP Act and Regulations:

A copy of the HARP Act and Regulations should be on site (available at http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900543_e.htm).

Dosimeters:

Mammography Technologists are not required to wear dosimeters if they only perform mammography. If they are performing other radiography, their employers for that site will provide dosimetry if required. In that case, the technologist should wear the same badge at both locations.

Technologists:

Pregnant technologists will be treated no differently than other technologists, since a negligible exposure is received when the equipment is operated from the control area.

Equipment:

Equipment problems are to be repaired as soon as possible and the appropriate service organization must be contacted directly by the local centre. The technologist should attempt to provide the service personnel with an idea of the nature of the problem, if possible, by telephone.

Below is a short list of the most likely problems, and how to approach them:

AEC malfunction:

Determine the nature of the failure using the DSB phantom. If the problem cannot be reproduced, continue imaging clients, monitoring the mAs used. If the problem is consistent, call service and rebook all clients for the next day. Manual timing using a technique chart may be acceptable, but not recommended.

Burnt-out collimator lamp:

call for "non-urgent" service; position clients carefully.

QC action limits exceeded:

- Determine the cause of the problem following the troubleshooting chart.
- Call the Equipment Service Company.
- Do not radiograph clients until the system is within limits.

Cracked or ripped compression paddle:

Order a new one, "rush". You may use the other size compressor plate if required. It may be advisable to keep a spare compression plate on site.

Acquisition Display Monitor QC test failure:

The monitors should be cleaned and re-calibrated to meet the DICOM Grayscale Standard Display Function (GSDF) when displaying mammography (MG) images.

A Record of Repairs and Problems must be kept in the Quality Control Manual for the equipment, including the time the service company was called, and the total downtime for the problem.

PHANTOMS, TEST TOOLS AND TEST IMAGES FOR DIGITAL QC

The phantoms required to perform OBSP and CAR QC at the site are the Digital Mammography Uniform Phantom (DMUP) the Digital Standard Breast (DSB) Phantom and the ACR/CAR Mammography Accreditation Phantom (RMI). (Both are provided by the Physicist)

The DMUP is a 4 cm thick slab of PMMA (poly methyl methacrylate, a clear plastic) which covers the entire image receptor This phantom is also used to evaluate the uniformity of the image, and the presence of Artifacts. If the DMUP phantom is damaged through misuse or lost, the cost of replacement is $750.

The DSB phantom is a new phantom. It consists of two semi-circular slabs of PMMA which total 4.5 cm in thickness. It comes with a 1 mm thick contrast disc within it and is used to measure the system “speed” and “contrast”. If the DSB phantom is damaged through misuse or lost, the cost of replacement is $550.

Monitor test patterns (AAPM TG-18) should be loaded on your acquisition workstation and onto your review workstations by your physicist or service person and should not be removed. The images will also be available on DICOM compliant CD from OBSP Physics.

ACR/CAR MAMMOGRAPHIC ACCREDITATION PHANTOM (RMI)

This phantom contains test objects to simulate indications of breast cancer, punctuate calcifications, tissue fibrillary extensions in adipose tissue and tumor like masses. This phantom is used to accurately evaluate the overall imaging performance of your mammography system.

Imaging of the CAR phantom weekly is at the discretion of the facility but is not required to meet OBSP QC requirements. CAR requires that CAR phantom be imaged at least monthly and visibility of the test objects be evaluated/scored.

As well, the submission of an image of this phantom is still part of the CAR Mammography Accreditation Program. Therefore facilities should be prepared to submit such images at the time of renewal of accreditation.

If you do not have access to a breast phantom (either Radiation Measurements Incorporation – RMI model 156, Computerized Imaging Reference Systems – CIRS model 015, or Nuclear Associates – NA 18-220), you may purchase on by contacting the Canadian Distributor, with a purchase order or a cheque for the amount of $795.00 plus applicable taxes and handling charges: (the price is reduced pricing exclusively for the CAR Accreditation program, you will be asked to give your MAP ID#)

Mr. Steven Gensens
RMI-156, CIRS-015, or NA 18-220
Canadian Scientific Products Ltd.
1055 Sarnia Road, Unit B-2
London, ON N6H 5J9
Telephone: 1-800-265-3460

IMPORTANT POINTS

TIME FOR QUALITY ASSURANCE PROCEDURES

Each of the elements of a facility's quality assurance program must be assigned to individuals who are qualified for their assignments and ***the facility must allow these individuals adequate time*** to perform these duties. Additional time must be allocated for retesting, corrective action, and retesting again if the initial results do not meet performance criteria.

All of the routine QC must be performed by the quality control technologist or by other personnel qualified to perform the tasks. When other personnel perform these tasks, the quality control technologist must ensure the tasks are completed properly.

INFORMATION STORAGE AND MAMMOGRAPHY UNIT IDENTIFICATION

In addition to quality requirements already in place for digital mammography, we point out that it is important to ensure certain key information is automatically transferred from the digital mammography image acquisition system to the stored DICOM image.

This information is required for several purposes: 1) QC, 2) to enable review of images by other facilities, 3) the estimation of client data, 4) tracking of imaging parameters, and 5) for use in

retrospective studies.

Specifically, systems MUST provide all information fields listed in Table 1, ideally without additional manual entry by the operator. In addition, it is DESIRABLE that systems also provide the information listed in Table 2.

The Institution address must include at least the city, province and postal code of the Institution. The Station Name would preferably be the CAR Unit number.

Table 1: Required DICOM Tags:

TAG NUMBER	TAG DESCRIPTION
0008, 0008	Institution Name
0008, 0022	Acquisition Date
0008, 0032	Acquisition Time
0008, 0081	Institution Address
0008, 1010	Station Name
0008, 1070	Operator
0010, 0010	Patient Name
0010, 0020	Patient ID
0018, 0060	kV
0018, 1152	Exposure or the two tags below
0018, 1150	Exposure Time and
0018, 1151	X-ray Tube Current
0018, 1191	Anode Target Material
0018, 5101	View Position
0018, 7050	Filter Material
0020, 0020	Patient Orientation
0020, 0062	Image Laterality

To fully document the imaging technique used, either tag 0018, 1152 (Exposure) or both tags 0018, 1150 and 0018, 1151 (exposure time and x-ray tube current) must be included.

Table 2: Desirable DICOM Header Tags:

TAG NUMBER	TAG DESCRIPTION
0018, 1114	Radiographic Magnification Factor or the two tags listed below
0018, 1111	Distance Source to Patient
0018, 1110	Distance Source to Detector
0018, 1400	Image Processing
0018, 1401	Acquisition Device Processing Code

To know the magnification factor used (i.e., when imaging on a magnification stand), either tag

0018, 1114 (Estimated Radiographic Magnification Factor) or both tag 0018, 1111 (Distance Source to Patient) and tag 0018, 1110 (Distance Source to Detector) should be included.

The Integrating the Healthcare Enterprise (IHE) (www.ihe.org) mammography handbook is useful for those who prepare "Request for Proposal" (RFP) documents for digital mammography. By specifying how systems interact, the standard ensures that images from different brands of mammography machines will be displayed in a consistent manner on all brands of review workstations. One of the requirements for compliance with IHE is the inclusion and correct population of the DICOM tags listed in Table 3.

Table 3: Additional Desirable DICOM Header Tags for compliance with IHE:

TAG NUMBER	TAG DESCRIPTION	COMMENTS
0008, 0070	Manufacturer	
0008, 1090	Manufacturer's model name	
0010, 0030	Patient's birth date	
0010, 1010	Patient's age	
0018, 1000	Device Serial Number	
0018, 1004	Plate ID	Required for CR
0018, 1008	Gantry ID	Required for CR
0018, 1020	Software Versions	
0018, 11A0	Body part thickness	
0018, 11A2	Compression Force	
0018, 1405	Relative X-ray exposure	
0018, 1510	Positioner primary angle	
0018, 2112	Source image sequence	Needed for CAD
0018, 700A	Detector ID	DR only
0018, 700C	Date of last detector calibration	Required if the detector undergoes periodic calibration (e.g., may not be applicable for CR).
0028, 0120	Pixel padding value	Required if background air suppression has been performed by replacing the pixels with a value not used within the breast tissue, so that pixels with this value can be excluded from contrast transformations.
0028, 0121	Pixel padding range limit	Required if Pixel Padding Value (0028, 0120) is present and the padding values are a range rather than a single value.
0028, 0301	Burned in annotation	Shall have the value "NO" unless the image was obtained by film digitization.

0028, 1055	Window centre and width explanation	Required if more than one Window Centre/Width pair or at least one window centre/width and VOI LUT sequence.
0028, 1056	Values of Interest Look-up table (VOI LUT) function	Required if window centre and width are not intended to be interpreted as parameters of a linear function.
0028, 1300	Implant present	
0028, 3010	VPI LUT sequence	Required if window centre and width not present
>0028, 3003	>LUT explanation	Required if more than one sequence item or at least one sequence item and window centre/width.
0040, 0316	Organ dose	
0040, 8302	Entrance dose in mGy	

CAR and OBSP both require that if there is more than one mammography unit in a facility, the Unit Number must be clearly identified on the image. Properly operating and configured software will provide all of the required information in the DICOM header.

In addition, systems should have the capability of exporting DICOM images to a portable external medium such as : DVD or USB flash disk.

ESTABLISHING OPERATING LEVELS & CONTROL LIMITS

Control limits are established by the medical physicist at equipment evaluation, when the equipment is known to be operating correctly.

When a quality control program is started or when equipment is newly installed, it is necessary to establish operating levels and control limits. The operating level is the level that is normally expected. For example, the background pixel value or optical density measured on a phantom image would be expected to be at, or close to, a particular value that is the standard operating level.

The control limits are performance criteria established based on operating levels which, if reached or exceeded by subsequent measurements, require additional action. The control limits should not be widened to accommodate varying performance. If the equipment produces results which are consistently outside of the control limits specified in this manual, then it will be necessary to have the appropriate repairs made or the equipment replaced.

If repairs or changes are made to the equipment such that new baselines need to be established, the medical physicist will either visit the site to determine the new operating levels as part of an acceptance test of the repaired/modified equipment or work with the site by telephone/email to guide the establishment of the new baselines.

CONTROL CHARTS

The QC technologist will be monitoring quantitative performance of DM systems in a number of QC tests. Plotting the results on a quality control chart will enable the technologist to quickly and visually determine if the system is performing as it should (i.e., within "control"), if trends are occurring which may eventually lead to an out-of-control system, and if performance variations are related to other events (e.g., service, calibration, etc.). The QC technologist must immediately plot the data on the control chart for reliable monitoring of the measurements in the QC program. Notes regarding changes in operating conditions (e.g., recent service, new flat-field maps or replacement of detector) should also be recorded.

Normally, if the control limits are reached or exceeded, the test procedure should be reviewed to determine if human error was a factor and the test should be immediately repeated to confirm the problem. If a repeat of the test gives a similar out-of-limits result, then ***corrective action is required***. In this case, the out-of-control data point should be circled or annotated, the cause of the problem noted (when known), the corrective action documented and the in-control data point plotted. Corrective action may include contacting the medical physicist to investigate the problem and recommend corrective actions or contacting a service engineer to correct a confirmed problem.

If the performance criteria or control limits from this manual are consistently exceeded, then it will be necessary to determine the cause of the problem. The cause may be the measurement technique. For example, if the amount of time the DR mammography unit is allowed to "warm up" after being turned on before imaging changes, the noise levels in the detector may change. Such variations in technique may be responsible for results that vary beyond control limits. All of these variables should be eliminated and data collected for another period of time before making a decision. If the control limits are still consistently exceeded, then the measurement equipment (e.g., the densitometer) should be evaluated.

If the measurement equipment is found to be functioning properly and all other variables have been eliminated, then equipment repair, or in extreme situations, replacement should take place. All of the problem data should be reviewed by the medical physicist, who may be able to make recommendations regarding correction of the problem.

NOTE: If the action limits are consistently exceeded, then it is necessary to improve the quality control procedures, or repair or replace the appropriate equipment. DO NOT widen the action limits since the data is indicating that the process is "out of control" and corrective action is essential.

Control charts also allow the detection of trends regarding an unstable process or drifting equipment calibration. A trend is an upward or downward change in the measured data when three data points move in the same direction. The cause of a trend should be investigated before the control limits are reached or exceeded.

Finally, there may be situations when operating levels and action limits need to be re-established. Typical examples are when the detector is recalibrated or changed or when new x-ray equipment is installed. This should be done in consultation with the medical physicist.

TECHNIQUE CHARTS

Ideally, digital mammography units should expose all breasts optimally. However there are cases where the breast shapes or compositions do not fit within the expectations of the equipment designer. This problem may be reduced by using a Digital Mammography Technique Chart that should be developed by the mammographic technologist in consultation with the medical physicist.

Some mammography units offer the selection of an anode target material and x-ray beam filter. In cases where the choices of target and filter are prescribed by the mammographic technologist, those choices should be included on the technique chart.

It may be necessary to use manual techniques to obtain appropriate exposures on images of breasts containing implants. The appropriate information can also be recorded on the technique chart.

Once the technique chart has been filled out, it should be posted on the DM unit adjacent to the control panel and followed by every technologist using the equipment when indicated. The manufacturer's recommendations should be followed, but the medical physicist, applications specialist and radiologist should be involved in optimizing this chart, and in setting appropriate aim values.

Digital Mammography Technique Chart

No Implants

Compressed Breast Thickness (cm)	Mammography Density	AEC Setting	Target	Filter	kVp	mAs	Aim Value (ADU)

Implants

Compressed Breast Thickness (cm)	Mammography Density	AEC Setting	Target	Filter	kVp	mAs	Aim Value (ADU)

TECHNIQUE TABLES

Recommended Technique Table for Large Focal Spots (LFS)

Compressed Breast Thickness	Fatty Breast kVp	mAs	Filter	Normal Breast kVp	mAs	Filter	Dense Breast kVp	mAs	Filter
1.0	25	25	Rh	25	30	Rh	25	35	Rh
2.0	25	50	Rh	25	58	Rh	25	65	Rh
3.0	26	72	Rh	26	84	Rh	26	95	Rh
4.0	28	92	Rh	28	106	Rh	28	120	Rh
5.0	29	128	Rh	29	152	Rh	29	176	Rh
6.0	31	171	Rh	31	194	Rh	31	216	Rh
7.0	30	131	Ag	30	147	Ag	30	163	Ag
8.0	32	143	Ag	32	163	Ag	32	182	Ag
9.0	34	156	Ag	34	176	Ag	34	195	Ag
10.0	36	156	Ag	36	174	Ag	36	192	Ag
11.0	37	190	Ag	37	205	Ag	37	220	Ag
12.0	39	170	Ag	39	185	Ag	39	200	Ag
13.0	39	235	Ag	39	253	Ag	39	270	Ag
14.0	39	310	Ag	39	335	Ag	39	360	Ag
15.0	39	360	Ag	39	360	Ag	39	360	Ag

Recommended Technique Table for Small Focal Spot (SFS)

Compressed Breast Thickness	Fatty Breast			Normal Breast			Dense Breast		
	kVp	mAs	Filter	kVp	mAs	Filter	kVp	mAs	Filter
1.0	25	32	Rh	25	36	Rh	25	40	Rh
2.0	25	54	Rh	25	63	Rh	25	72	Rh
3.0	27	66	Rh	27	77	Rh	27	88	Rh
4.0	29	86	Rh	29	100	Rh	29	113	Rh
5.0	31	103	Rh	31	118	Rh	31	133	Rh
6.0	31	86	Ag	31	99	Ag	31	111	Ag
7.0	33	94	Ag	33	106	Ag	33	117	Ag
8.0	35	104	Ag	35	117	Ag	35	130	Ag
9.0	37	105	Ag	37	118	Ag	37	131	Ag
10.0	39	100	Ag	39	113	Ag	39	126	Ag
11.0	39	150	Ag	39	150	Ag	39	150	Ag
12.0	39	150	Ag	39	150	Ag	39	150	Ag
13.0	39	150	Ag	39	150	Ag	39	150	Ag
14.0	39	150	Ag	39	150	Ag	39	150	Ag
15.0	39	150	Ag	39	150	Ag	39	150	Ag

IMAGE VIEWING CONDITIONS

Viewing conditions are extremely critical in mammography. The information for the procedures entitled, “Display Monitor QC” and, “Viewbox Cleanliness” should be read and followed with great care. The higher optical density mammograms needed to maximize lesion detection require high luminance viewboxes, proper masking of each film, and low ambient room light. All mammograms and mammography test images must be completely masked when being viewed, i.e., no light should come directly from the viewbox surface or monitor to the eye of the observer. These viewing conditions apply to the technologist QC area as well as the area where the radiologist interprets images. If printed digital mammograms are viewed on the viewbox, it should be understood that the printer is calibrated for use with a viewbox with a given intensity, and that the diagnostic quality of the image may not be as expected.

The correct calibration of monitors used to view digital mammograms takes into account the effect of ambient room light on the final appearance of the image. Thus, appropriate room lighting should be determined during initial setup of the monitors in consultation with the radiologist(s) and site physicist.

These viewing conditions should be maintained for all future use and testing of the monitors. If the ambient illumination changes, it will be necessary to have the monitor calibration adjusted.

Current research publications suggest that the ambient light level in reading rooms can be higher than previously thought (20-40 lux). This level of light (enough to read black text printed on a white page) may reduce eye-strain.

Whenever mammograms or phantom images are viewed, they should be viewed under identical conditions. For example, phantom images should be viewed on the same viewbox or monitor, with the same lighting conditions, and using the same magnifier as used for viewing clinical mammographic images and at the same time of day, for example, first thing in the morning. In addition, the same viewbox masking should be used for both clinical and phantom images.

Whenever it is necessary to make subjective judgments about phantom images, e.g., determining resolution in test images, the perception of low contrast changes or the detection of Artifacts, the evaluation should be carried out by the same person using conditions identical to those used for previous evaluations.

MAMMOGRAPHY QC

DIGITAL MAMMOGRAPHY QUALITY CONTROL TESTS/TEST FREQUENCY

The QC test procedures required by the mammographic technologist are listed in this section.

Table 1: Full Field Digital Mammography

Technologist's Quality Control: Minimum Test Frequencies without Laser Printer

Test #	Test	Minimum Frequency	Corrective Action Timeframe
1.	Monitor inspection, cleaning and viewing conditions	Daily	Immediately
2.	Daily/Weekly Checklist	Daily	Immediately, before checked component is used for clients
3.	Daily flat field image	Daily	Immediately
4.	Detector Calibration	Weekly	Immediately
5.	Artifact Evaluations	Weekly	Immediately
6.	CAR Mammography Accreditation Phantom Image (SNR & CNR)	Weekly	Immediately
7.	SDNR Phantom	Weekly	Immediately
8.	Display Monitor QC	Weekly	Immediately: workstation-before client images interpreted; acquisition station monitor - before clients imaged
9.	Compression Thickness Indicator (fast compression)	Bi-Weekly	Within 30 days
10.	Repeat Analysis	Monthly	Within 30 days of the test date
11.	Compression Force	Semi-Annually	Immediately
12.	Viewbox Cleanliness Viewing Conditions	Weekly	Immediately, before client images are interpreted or comparison films reviewed
13.	Monthly Checklist	Monthly	Immediately or within 30 days, depending on check

DAILY QUALITY CONTROL TEST PROCEDURES

These procedures are to be conducted daily.

Record the performance of all daily QC tests on the provided charts.

TEST #1 – Monitor Inspection, Cleaning and Viewing Conditions
TEST #2 – Daily Checklist
TEST #3 – Daily Flat Field Image

Test #1: Monitor Inspection, Cleaning and Viewing Conditions

Objective

To keep monitor screens free of dust, fingerprints and other marks that might interfere with image interpretation. To confirm that image viewing conditions are acceptable.

Frequency

Daily

Required Test Equipment

Dry, soft, lint-free cloth or lens tissue Water or approved monitor face cleaner

Test Procedure Steps

1. Clean all monitor screens gently with the cloth lightly dampened with water if required.
2. Record the monitor cleaning on the daily and weekly checklist.
3. Ensure that appropriate cleaning solutions are in the examination room.
4. Record viewing condition status in the daily and weekly checklist.

Precautions and Caveats

Abrasive materials or alcohol should not be used on monitor faces, since the anti-glare surface on the display might be destroyed.

Performance Criteria and Corrective Action

Monitor screens must be free of dust, fingerprints and other marks that might interfere with image interpretation. There should be no “shiny” patches or obvious non-uniformities on the surface.

The lighting conditions and room configuration must match what is described on the medical physicist’s worksheet. Sources of bright light must not be present in the room and must not be reflected from the viewbox and/or monitor surfaces. Any required corrective action must be undertaken before images are interpreted.

Timeframe for Corrective Action

Before client images are interpreted.

Test #2: Daily Checklist

Objective

To confirm that the digital mammography unit is functioning adequately.

Frequency

Daily

Required Test Equipment

Daily checklist

Test Procedure Steps

1. Visually inspect the unit for loose parts, cracks in the compression paddles, compressor and Bucky cleanliness and overall integrity.
2. Check that all hoses and cables are free from breaks, crimps, or knots. Hoses and cables should not be under other heavy equipment.
3. Ensure that the current technique chart is posted.
4. Ensure that the cleaning solution for the breast support plate and compressor is available.
5. Perform any additional daily tests or procedures required by the manufacturer's QC program.
6. Record status on the "daily–weekly" checklist.

Performance Criteria and Corrective Action

If the criteria for the manufacturers recommended daily checks are not met, service support should be called.

Timeframe for Corrective Action

Immediately, before any patients are imaged.

DIGITAL MAMMOGRAPHY DAILY CHECKLIST

Please photocopy this document to submit 12 consecutive months of Daily/Weekly Tests (6 months for new applicants or unit replacements)

FACILITY:_____ ROOM:_____ YEAR:_____

Check mark = Pass/Adequate; X = Fail; Initial when complete

MONTH																														
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
INITIAL																															
NO LOOSE PARTS																															
OVERALL INTEGRITY																															
CLEANLINESS																															
CRACKS IN PADDLES																															
JSING AND CABLING UNOBSTRUCTED																															

MONTH																														
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
INITIAL																															
NO LOOSE PARTS																															
OVERALL INTEGRITY																															
CLEANLINESS																															
CRACKS IN PADDLES																															
JSING AND CABLING UNOBSTRUCTED																															

Test #3: Daily Flat-field Image

It is important that Artifacts which could interfere with clinical interpretation be detected before image quality deteriorates significantly. If an Artifact that looks like a dead pixel or group of dead pixels occurs, it is very important to know whether it persists in time, and whether its position changes on successive days. Performance of a daily flat field image allows detection and monitoring of such problems.

Objective: To ensure that clinical images produced are free from Artifacts that might interfere with image Interpretation.

Applicability: All systems

Frequency: Daily.

Required Test Equipment

OBSP Digital Mammography Uniform Phantom (DMUP) or a uniform slab of PMMA that has been supplied by the manufacturer for flat-field correction would also be acceptable. The slab should be free of scratches or other imperfections that would cause Artifacts. The slab should preferably cover the entire area of the image receptor. The same test object should be used each time. It is acceptable, but not required to have a contrast disc or other fixed structure in the image.

Test Procedure Steps

1. Place the test object on the breast support centered laterally extending slightly beyond the chest wall edge of the digital image receptor.

2. Apply compression force typically used clinically (e.g. 8 daN).

3. Acquire an image of the test object using standard clinical settings (i.e. the automatic exposure protocol mode most commonly used on patients). The DICOM "for presentation" version of the image should be used for this test.

4. Record the kV and mAs used to acquire the image on the Daily Flat Field Phantom Chart.

5. View the "for presentation" image on the acquisition display workstation. Use the window width (WW) and window level (WL) as recommended by your medical physicist. These settings result in the background of the phantom being displayed with a mid-grey. The same WW and WL settings (± 10) should be used each time an image is evaluated. An appropriate choice of window width is critical to catch Artifacts yet not "fail" clinically acceptable images. Window width choice should be based on what is appropriate/typical for breast images or for a phantom with breast-like features.

6. With the same WW and WL as used above, evaluate the entire image for overall appearance

and for Artifacts. Examine the entire image for both broad area Artifacts, such as non-uniformities, blotches, and streaks, and for detailed Artifacts, such as black or white pixels, clusters of pixels, lines, or specks. Broad-area Artifacts are typically best seen while observing the phantom image as a whole, not piecewise. Detailed Artifacts are typically best seen while observing the phantom image at full spatial resolution, where one pixel on the display corresponds to one pixel in the image, or even in magnified form (with a magnification greater than 1.0).

7. Record the absence or presence of Artifacts on the Daily Phantom Flat Field Chart**.**

Note: An artifact is considered significant if it may mimic or obscure anatomic features.

Performance Criteria and Corrective Actions

a. There should be no blotches or regions of altered texture appearance

b. There should be no observable lines or structural Artifacts.

c. There should be no "bright" or "dark" pixels evident.

d. If any Artifacts are visible that might mimic or obscure anatomic information or if any patterns are seen, a recalibration or flat-fielding of the digital detector may be needed for DR systems. The compression plate and all accessible surfaces that are in the imaging field should be cleaned to remove any debris or extraneous material. For CR systems, clean the Imaging plate following the manufacturer's directions. After this has been done, repeat the test. If Artifacts persist, contact your authorized service representative.

Timeframe for Corrective Action

Immediately

Note: If this test fails, do not image patients until corrective action has been taken.

CHART 2: DAILY FLATFIELD PHANTOM

Facility:_____ Room/Unit: _____

Manufacturer:_____ Model: _____

Phantom Serial #:_____ _____

Uniform phantom baseline:_____ Viewing Parameters (Processed Images)

Exposure mode (AEC/AOP):_____ Window Width:_____

Target/Filter:_____ Window Level:_____

KV:_____

Compression thickness (mm):_____

Compression Force (daN): _____

	Year																													
	Month																													
	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
	Initial																															
	kV																															
	mAs																															
Artifacts	Softcopy																															
Acceptable	Hardcopy																															

Date: _____

Remarks: _____

_____

_____

WEEKLY QUALITY CONTROL TEST PROCEDURES

These procedures should be conducted on the same day each week. It is suggested that approximately one-half hour be set aside to conduct these procedures. Allow the system to stabilize before acquiring phantom images. It may be helpful to conduct these weekly procedures for the first time with your medical physicist present to answer any questions that arise.

Record the performance of all weekly DM QC tests on the provided charts.

TEST #1 – Daily/Weekly Checklist

TEST #2 - Detector Calibration

TEST #3 – Full Field Artifact Test./Artifact Evaluation

TEST #4 – CAR Mammography Accreditation Phantom (RMI)/SNR & CNR

TEST #5 – Phantom Image Quality (DSB) (SDNR)

TEST #6 – Display Monitor QC (tech workstation) (Rad Workstation)

TEST #7 – View box Cleanliness and viewing condition

TEST # 1: DAILY/WEEKLY TESTS CHECKLIST

This checklist is provided to help ensure that all QC tests are completed. These checklists provide a quick reminder of when quality control tests are due and also provide a record that tasks have been completed. Each time a task is completed, the individual carrying out the task should initial the appropriate area on the checklist.

MAP ID#:_____

DIGITAL MAMMOGRAPHY QUALITY CONTROL CHECKLIST

Please photocopy this document to submit 12 consecutive months of Daily/Weekly Tests (6 months for new applicants or unit replacements)

DAILY/WEEKLY TESTS

FACILITY:_____ ROOM:_____ YEAR:_____

Check mark = Pass/Adequate; X = Fail; Initial when complete

MONTH																														
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
INITIAL																															
OR CLEANING (DAILY)																															
Y CHECKLIST (DAILY)																															
IEW MONITOR QC (WEEKLY)																															
SITION MONITOR QC (WEEKLY)																															
T IMAGE EVALUATION R/SDNR) (WEEKLY)																															
L FIELD ARTIFACT (WEEKLY																															

MONTH																														
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
INITIAL																															
OR CLEANING (DAILY)																															
ILY CHECKLIST (DAILY)																															
REVIEW MONITOR QC (WEEKLY)																															
ISITION MONITOR QC (WEEKLY)																															
T IMAGE EVALUATION CNR/SDNR) (WEEKLY)																															
FULL FIELD ARTIFACT (WEEKLY																															

TEST #2: DETECTOR FLAT FIELD CALIBRATION

Objective

To assure that the system is calibrated properly.

Frequency

Weekly

Required Equipment

Flat Field phantom: 4 cm thick uniform attenuation block of acrylic large enough to cover the digital image receptor. The Flat Field phantom is supplied by the manufacturer.

Test Procedure Steps

1. If the system was recently or just powered up, wait the posted time required for the digital detector to come up to temperature.

   Note: Before performing an image quality test, the system must change status from Detector Warming to All Ready.
2. Remove any compression paddle from the compression device.
3. Move the compression device at a distance between 5 and 7 cm above the image receptor as indicated by the thickness display.
4. Make sure that both the Flat Field phantom and the surface of the image receptor are clean. Place the Flat Field phantom on top of the image receptor covering its entire surface.

   Note: It is important to clean the Flat Field phantom and the surface of the digital image receptor before starting the calibration procedure.

Calibration Procedure

1. Select **Admin>Quality Control>Technologist tab>Gain Calibration** procedure on the Acquisition Workstation.
2. Select **Start.**
3. Follow the instructions on the screen and take the first predefined exposure. Do not change the preselected techniques unless otherwise instructed.
4. If you are instructed to install the magnification platform, use the 1.8x insertion points.
5. Review the preview image for foreign objects, gross artifacts other than non-uniformities or collimation interference.
6. Select **Accept** if the image is clean and the collimation blades do not intrude into the imaging space.
7. Repeat Step 3 to Step 6 until all predefined exposures are acquired.

   Note: All predefined exposures need to be completed for the Detector Flat Field Calibration to be completed successfully. Ending the calibration sequence in the middle of the procedure will invalidate the current Detector Flat Field Calibration and revert back to the previous calibration.
8. After acquiring and accepting the last predefined exposure, select **End Calibration.**
9. Select **Admin>Quality Control>Technologist tab>CEDM Gain Calibration** procedure on

the Acquisition Workstation.

10. Repeat Steps 2 to 8.

Record Forms

It is not required to record the execution of this test since the system keeps track of when the test was performed last and prohibits manual removal of the test from the Due test list. However, a "Detector Flat Field Calibration" form is included in Appendix B in case the facility would like to keep track of when this test was performed.

Data Analysis and Interpretation

Note: If the calibration fails for any reason, assure that the x-ray field covers the entire surface of the digital image receptor without any interference from the collimation. Assure that the Flat Field phantom also covers the entire surface of the digital image receptor. Calibration failure may also be caused by altering the radiographic techniques between exposures. In the event of calibration failure, start the detector Flat Field calibration procedure from the beginning. If failure persists, a qualified service engineer must be contacted.

1. Detector Flat Field calibration is performed automatically by software on the Acquisition Workstation from the acquired set of predefined exposures.
2. Disregard any non-uniformities which appear in the acquired calibration images. Any non-uniformities will be corrected as part of the calibration process.

Recommended Performance Criteria and Corrective Action

If, after calibration, new artifacts appear during imaging, consult with a medical physicist or radiologist for assistance in evaluating these artifacts according to the guidelines provided in this manual under the corresponding Artifact Evaluation sections.

If the calibration procedure fails repeatedly, the source of the problem must be identified and corrective actions must be taken before any further examinations are performed.

DETECTOR FLAT FIELD CALIBRATION

FFDM SERIAL NUMBER:_____

Date Completed	Initials	Date Completed	Initials

Remarks: (include Date/Action taken)

_____

_____

_____

_____

TEST #3: ARTIFACT EVALUATION

Objective

To assure that the image is free of undesirable artifacts.

Frequency

Weekly, preferably before Phantom Image Evaluation.

Suggested Equipment

Flat Field phantom: 4 cm thick uniform attenuation block of acrylic large enough to cover the digital image receptor. The Flat Field phantom is supplied by the manufacturer.

Note: Before performing an image quality test, the system must change status from Detector Warming to All Ready.

It is recommended that System Artifact Evaluation is executed after Detector Flat Field Calibration when possible.

Test Procedure Steps

1. Remove any compression paddle and lower the compression device between 5 cm and 7 cm.
2. Make sure that both the Flat Field Phantom and the surface of the image receptor are clean. Place the Flat Field Phantom on top of the image receptor to cover its active surface.
3. Select **Admin>Quality Control>Technologist tab>Artifact Evaluation** procedure on the Acquisition Workstation.
4. Select **Start**.
5. Select **None** at the device Output Set if you do not wish to store the Quality Control Images. Select an alternative **Output Set** if you wish to store them.

Artifact Evaluation with Rhodium (Rh) Filter and Large Focal Spot (LFS)

1. Select the first **Flat Field Conv** view from the Procedure screen on the Acquisition Workstation.
2. Set the exposure techniques per the following table:

Table 32: Artifact Evaluation Rh Filter Exposure Technique

Mode	kVp	Filter	Focal Spot	AEC Sensor Position
Auto-Time	28	Rh	Large	2

3. Acquire an exposure.
4. Select the **Actual Pixels** button to bring the image into full resolution.
5. Pan through the entire image with patient information turned off. Look for artifacts such as bad pixels or sharp lines of demarcation.
6. Note any technical factors and any artifacts on the record form, then select **Accept.**

Artifact Evaluation with Silver (Ag) Filter and Large Focal Spot (LFS)

1. Turn the Flat Field phantom 180 degrees.
2. Lower the compression device between 5 cm and 7 cm.
3. Select the second **Flat Field Conv** view from the Procedure screen on the Acquisition Workstation.
4. Set the exposure technique per the following table:

Table 33: Artifact Evaluation Ag Filter Exposure Techniques

Mode	kVp	Filter	Focal Spot	AEC Sensor Position
Auto-Time	31	Ag	Large	2

5. Acquire an exposure.
6. Select the **Actual Pixels** button to bring the image into full resolution.
7. Pan through the entire image with patient information turned off. Look for artifacts such as bad pixels or sharp lines of demarcation.
8. Note any technical factors and any artifacts on the record form, then select **Accept.**

System Artifact Evaluation

Note: Acquiring an image for artifact evaluation using a Flat Field view sets the image window to 500 and the image level to the exposure index automatically. Artifact evaluation must be performed under these predefined settings.

1. View the images on the Acquisition Workstation display. If no artifacts are visible, document the result in the Artifact Evaluation form.
2. If any artifacts are visible, rotate the Flat Field phantom about 180 degrees and repeat the above test procedure. If the appearance of any artifact changes location between the two images, those artifacts are present in the phantom, and do not indicate problems in system performance. The appearance of persistent artifacts in the same location may indicate artifacts that originate in the x-ray system or digital image receptor.
3. View the overall image for uniformity from left to right and top to bottom. Any areas appearing different with sharp lines of demarcation between them indicates a digital image receptor problem. Perform a detector calibration and then repeat the Artifact Evaluation Test.
4. If such artifacts persist, ask your medical physicist to perform a system artifact analysis, described in the “Quality Control Activities for the Medical Physicist” section of this manual.
5. Document the appearance of any artifacts on the “Artifact Evaluation” form.

Recommended Performance Criteria and Corrective Action

A qualified service engineer must correct the source of intolerable artifacts on the DICOM printer within thirty days of the test date.

Artifacts that are traced to the digital image receptor or the x-ray unit must be eliminated by a qualified service engineer within thirty days of the test date. If artifacts cannot be eliminated, the medical physicist must consult with the radiologist for assistance in evaluating whether any remaining artifacts may interfere with image interpretation or may be tolerable.

Note: Artifacts that appear on the digital image receptor and are not dropped pixels or lines may be able to be removed by recalibrating the digital detector according to *"Detector Flat Field Calibration"*

Note: Artifacts that appear on the Flat Field phantom provided by the manufacturer must not be overlooked. Such artifacts will have an impact on detector calibration since the same block is being used during detector calibration. Replacement of the Flat Field phantom must be considered.

System Artifact Evaluation

YEAR:																				
DATE:																				
INITIALS:																				
ATTENUATOR:	Acrylic				Acrylic				Acrylic				Acrylic				Acrylic			
kVp:																				
mAs:																				
Filter:	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu
Artifacts:																				
Acceptable?:																				

YEAR:																				
DATE:																				
INITIALS:																				
ATTENUATOR:	Acrylic				Acrylic				Acrylic				Acrylic				Acrylic			
kVp:																				
mAs:																				
Filter:	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu
Artifacts:																				
Acceptable?:																				

YEAR:																				
DATE:																				
INITIALS:																				
ATTENUATOR:	Acrylic				Acrylic				Acrylic				Acrylic				Acrylic			
kVp:																				
mAs:																				
Filter:	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu	Rh	Ag	Al	Cu
Artifacts:																				
Acceptable?:																				

Remarks

Date: **Action:**

TEST #4 PHANTOM IMAGE/CAR MAMMOGRAPHY ACCREDITATION PHANTOM (RMI)

Objective:
To assess the quality and consistency of the mammographic image.

Frequency:
Weekly

Suggested Equipment:

- 18 x 24 cm flat compression paddle
- ACR Mammographic Accreditation Phantom
- Acrylic disc, 4.0 mm thick with 1.0 cm diameter to place on the top of the ACR Mammographic Accreditation Phantom

Test Procedure:

Note: Before performing an image quality test, the system must change status from Detector Warming to All Ready.

1. Select **Admin>Quality Control>Technologist tab>Phantom Image Quality** procedure on the Acquisition Workstation.
2. Select the **Start** button.
3. Install the compression paddle in the compression device.
4. Center the ACR phantom laterally on the image receptor and position it so that the chest wall edge of the phantom is aligned with the chest-wall edge of the image receptor.
5. Place the 1 cm diameter acrylic disk on top of the phantom in a uniform region that does not cover any portion of the AEC sensor or any of the details in the phantom.
6. Select **None** at the device Output Set if you do not wish to store the Quality Control images. Select an alternative **Output set** if you wish to store them.
7. Set the techniques for the acquisition:

Phantom Image Exposure Techniques

Mode	Focal Spot	AEC Sensor Position	Compensation Step
Auto-Filter	Large	2	0

8. Acquire an exposure in the selected AEC mode.
9. Record the kVp, mAs, filter, and exposure index for the acquisition.
10. Move to the “Data Analysis and Interpretation”section.
11. Accept the Image in the Procedure screen on the Acquisition Workstation.
12. Select the **End QC** button to mark the Quality Control procedure as completed when you are done with Data Analysis and Interpretation.

Record Forms:
Use the “Phantom Control Chart” to record results.

Data Analysis and Interpretation:
Refer to “Scoring a Phantom”

Recommended Performance Criteria and Corrective Action:
If the phantom score fails to meet the recommended criteria as specified below, the source of the problem must be identified and corrective action must be taken before any further examinations are performed.

Acceptance Score for Conventional ACR Phantom Image:

ACR Mammography Accreditation Phantom Minimum Passing Score

ACR Mammography Accreditation Phantom	Fibres	Speck Groups	Masses
Minimum Passing Score	5.0	4.0	4.0

There may be small fluctuations in scoring of the fibers and masses due to phantom variations. If the fiber score is 4.5 and or the mass score is 3.5, then examine the SNR and CNR of the system. If both those exceed recommended criteria, then a total score of 4.5 fibers, 4.0 specs and 3.5 masses is acceptable.

PHANTOM CONTROL CHART

Phantom Serial #:_____FFDM Serial #:_____

YEAR:_____

Month												
Day												
Initials												
Filter												
kVp												
mAs												
EI												

FIBERS	6												
	5												
	4												
	3												
	2												
	1												

SPECKS	5												
	4												
	3												
	2												
	1												

MASSES	5												
	4												
	3												
	2												
	1												

REMARKS:

DATE:	ACTION:

Signal-To-Noise and Contrast-To-Noise Measurements

Objective:

To assure consistency of the digital image receptor by evaluating the signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) of the image receptor.

Frequency:

Weekly

Suggested Equipment:

- 18 x 24 cm flat compression paddle
- ACR Mammographic Accreditation Phantom
- Acrylic disc, 4.0 mm thick with 1.0 cm diameter to place on the top of the ACR Mammographic Accreditation Phantom.

Test Procedure:

Select an ACR Phantom Image

You have a choice to use either a previously acquired ACR Phantom image or acquire a new ACR phantom image for this test procedure.

Using a previously acquired ACR phantom image

1. If the ACR Phantom image is still open, proceed to step 6.
2. From the Select Patient screen, select the **QC** tab.
3. Select the previously acquired **Phantom Image Quality Evaluation** exam with the correct completed date and time.
4. Select the **Open** button.
5. Select the **SNR** button.
6. Record the SNR. Record the CNR change percentage.

Acquire a New ACR Phantom Image

Note: Before performing an image quality test, the system must change status from Detector Warming to All Ready.

1. Install the 18 x 24 cm flat compression paddle in the compression device.
2. Center the ACR phantom laterally on the image receptor and position it so the chest wall edge of the phantom is aligned with the chest wall side of the image receptor.
3. Place the acrylic disc on the top of the phantom in a consistent location in the image area so it will not obscure details in the phantom and where it cannot cast a shadow on any portion of the AEC detector. A suitable location is between and slightly below the first and second largest fibers.

4. Lower the compression device so that the compression paddle sits on the ACR phantom.
5. From the Select Patient screen, select **Admin>Quality Control>Technologist tab>SNR/CNR** on the Acquisition Workstation. Click **Start.**
6. Select **None** at the device Output Group if you do not wish to store the Quality Control images. Select an alternative **Output Group** if you wish to store them.
7. Select an **ACR Phantom Conv** view from the Procedure screen on the Acquisition Station. When using this view, the system assumes that an ACR phantom is being imaged and sets the acquisition technique appropriate for ACR phantom imaging. In this case, the compression thickness can be higher than 4.2 cm since it no longer determines the acquisition technique. However, it is recommended that the compression paddle is as low as possible with some amount of compression force applied, so that the ACR phantom is still firmly compressed and does not move during the image acquisition.
8. Set techniques for the acquisition:

Signal-To-Noise and Contrast-To-Noise Exposure Techniques

Mode	Focal Spot	Exposure Compensation	AEC Sensor	Grid
AEC Auto-Filter	Large	0	2	In

9. Acquire an image using the ACR Phantom Conv view.
10. Record the kVp, mAs, and exposure index for the acquisition
11. Accept the image in the Procedure screen on the Acquisition Workstation.

Select the ROI Creation Method

You have a choice to use either the Automatic or Manual ROI method after acquiring the ACR Phantom image.

Automatic ROI Creation

When you use the ACR Phantom view to acquire an image, the system assumes that an ACR Phantom is being imaged and activates the SNR button to the Tools tab window on the Procedure screen. The system automatically acquires and computes the SNR and CNR values.

1. Select the **SNR** button. The system places two ROI boxes on the image and displays SNR, CNR and corresponding information used for the calculations.

Note: If the ROI's placed automatically by the system do not match the relative positions, you can manually adjust the location of the ROI's. The SNR and CNR results are recalculated automatically.

Manual ROI Creation

1. Select the **ROI tab** on the procedure screen.
2. Select **Draw** or **64** and use the trackball to draw an ROI on the preview image completely inside the acrylic disk. The ROI window displays the available ROI information.
3. Record the mean value (Mean) given in the ROI window.
4. Drag the previously drawn ROI right next to the acrylic disk, towards the chest wall.
5. New ROI Statistics appear in the ROI window.
6. Record the mean value (Mean), the SNR, and the standard deviation (Std).

Update the Quality Control Data on the Acquisition Workstation

If you used a previously acquired ACR Phantom Image for your test:

a. From the Select Patient screen, select **Admin>Quality Control>Technologist tab>SNR/CNR.**
b. Select the **Mark Completed** button to label the status of this procedure as finished. Select the **Yes** button to mark the Quality Control procedure as completed.

If you acquired a new ACR Phantom Image for your test, select the **End QC** button to mark the Quality Control procedure as completed when you are done with Data Analysis and Interpretation.

Record Forms

Use the "Signal-to-Noise Ratio (SNR) and Contrast-to-Noise Ratio (CNR) form to record results.

Data Analysis and Interpretation

Automated Method

With the automated SNR and CNR function, the SNR and CNR are calculated automatically for an appropriately acquired phantom view. The values of SNR and CNR, as well as the ROI's used for the measurement are displayed. The user should check if the ROI's selected by the program are in the appropriate locations. If they are well positioned, record the SNR and CNR values. If the location of one ROI or both ROI's need to be adjusted, move the ROI(s) to the appropriate location and the SNR and CNR values will be automatically updated based on the new ROI location.

Note: The calculation of the SNR value displayed by the automated method already accounts for the DC offset.

Manual Method (for reference use only)

Note: The SNR must be computed using the mean and standard deviation values obtained from the ROI next to the acrylic disk.

1. Compute the SNR of the detector according to

$$SNR = \frac{mean_{background} - DC_{output}}{std_{background}}$$

Where $mean_{background}$ and $std_{background}$ are the mean and standard deviation obtained from the ROI Statistics dialog for the ROI next to the acrylic disk and DC_{offset} is a DC offset added to the detector signal and is equal to 50.

2. Compute the CNR of the detector according to

$$CNR = \frac{mean_{background} - mean_{disk}}{std_{background}}$$

Where $mean_{disk}$ is the mean value obtained from the ROI Statistics dialog for the ROI on the acrylic disk.

3. Compute the deviation from the original CNR measurement according to

$$Diff = \frac{CNR_{measured} - CNR_{base}}{CNR_{base}} \times 100$$

Where CNR_{base} is the CNR base value established by the medical physicist during acceptance testing of the digital detector and is recorded in the Signal-To-Noise Ratio (SNR) and Contrast-To-Noise Ratio (CNR) Control Chart included in this manual; $CNR_{measured}$ is the new CNR computed in step 2.

<u>Recommended Performance Criteria and Corrective Action</u>

The measured SNR must be equal to or greater than 40. If it is less than 40, repeat the test.

The computed CNR must be within +/-15% of the value determined by the medical physicist during the equipment evaluation when the image receptor was installed or after a major upgrade.

If these criteria are not met, a qualified service engineer must correct the problem before using the system for clinical imaging.

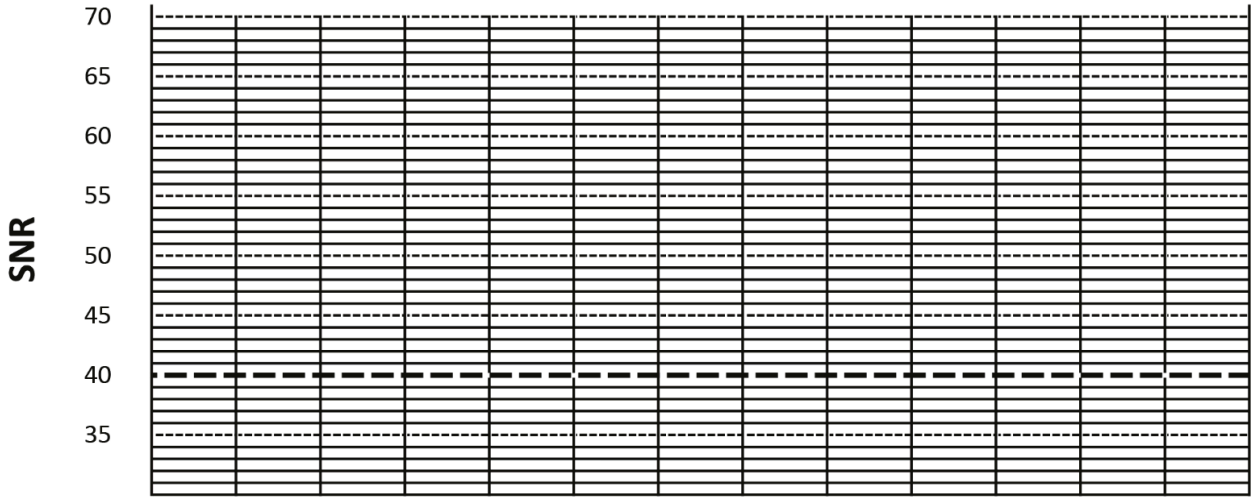
Note: The CNR baseline may need to be evaluated and a new value may need to be established under the following conditions:

- detector replacement
- detector modification (i.e. power supply replacement, readout sequence replacement, etc)
- AEC dose adjustment
- ACR phantom replacement or alteration (i.e. permanent repositioning of the acrylic disk)
- any other reason the medical physicist feels that may affect the CNR calculation

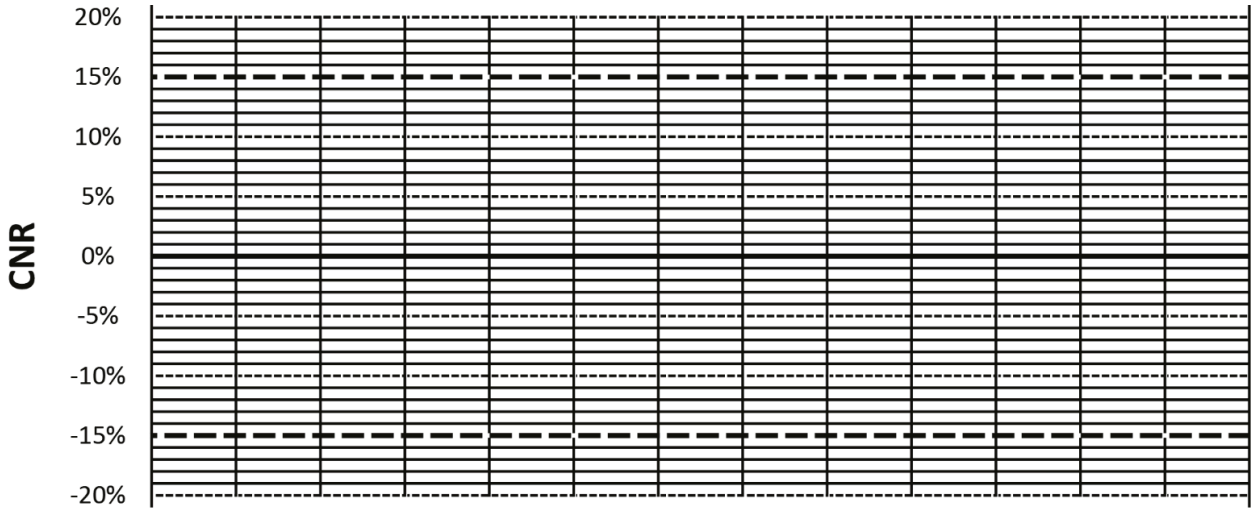
6. Signal-To-Noise Ratio (SNR) and Contrast-To-Noise Ratio (CNR)

Year:

Month:													
Day:													
Initials:													
kVp:													
mAs:													
E.I.:													



CNR Base Value:_____ Date:_____ Initials:_____



Remarks

Date:	Action

Test #5: Phantom Image Quality (DSB Phantom) (SDNR)

In digital mammography, it is essential to perform routine assessments on the image of a test object to confirm that there have been no substantial changes in imaging performance from the baseline. The recommended method provides both subjective and quantitative measures of performance.

Objective

To monitor consistency of imaging performance (e.g. variations in detector performance) in terms of factors that affect dose and image quality. Comparison is made with baseline performance levels using "for presentation" images as viewed by the radiologist. Quantitative performance indicators are the mean pixel value (MPV), mAs employed for imaging and signal difference to noise ratio (SDNR).

Frequency

Weekly

Required Test Equipment

The Digital Standard Breast (DSB) Phantom - a 45 mm thick PMMA phantom, semi-circular in shape. The same test object should be used each time. 1 mm thick, 25 mm diameter contrast disc (if the DSB phantom does not have a 1 mm well in its top surface)

Test Procedure Steps

1. Open a test client exam named QC Mammo at the acquisition workstation and give it an ID number specific to the. Using an image numbering system that tracks your QC images over time in a consistent manner will allow you to find your QC records in an easy way.
2. Ensure that the most commonly used compression paddle (or the paddle specified by your medical physicist for QC procedures) is installed. The paddle to use should be recorded at the top of the OBSP DM QC Phantom Control Chart**.**
3. Place the DSB phantom on the breast support centred laterally and aligned with the chest wall edge of the digital image receptor.
4. Apply compression force typically used clinically (e.g. 80 N)*. Record the compression force used. Use that same amount of compression force each time the DSB is imaged. Record the compression thickness readout on the OBSP DM QC Phantom Control Chart.

> **Note**: The actual force should be similar to the typical value used clinically, but the same value should be used for all testing. Note that in some systems and in some modes of operation the compressed breast thickness is used in an automated algorithm to determine the technique factors and this thickness is, in turn, dependent on the degree of compression applied.

5. If there is a separate AEC sensor, confirm that it is not directly under the contrast well. The sensor should be in the same position every time the test is performed.
6. Acquire an image of the test object using the settings provided in "Digital Mammography QC Phantom Baseline Calculation Worksheet''. This should have been provided by the physicist. If this chart is not available, then use the same technique settings that you would use for a clinical exposure of a standard breast. Normally this is achieved by using the automatic exposure mode. Otherwise, select target, filter, kV, grid,

density control position, operation mode (semi automatic or automatic) as appropriate. The DICOM "for presentation" version of the image should be used for this test.

> **Note:** The same exposure mode and paddle should be used for all subsequent phantom exposures**.**

7. Record the technique used to acquire the image (target, filter and kV). For systems using automatic exposure control (AEC or AOP), the target material, filtration and kVp should not change from one exposure to the next. Plot the mAs. If the target, filtration or kV change, or the mAs value is outside the action limits, repeat the image. If there is still a problem, either your medical physicist or service organization should be contacted.
8. View the processed image on the radiologist's softcopy display station. Use the window width (WW) and window level (WL) as recommended by your physicist. These settings result in the background of the phantom being displayed with a mid-gray. The same WW and WL settings (+/- 10 ADUs) should be used each time an image is evaluated. An appropriate choice of window width is critical to catch Artifacts yet not "fail" clinically acceptable images. Window width choice should be based on what is appropriate/typical for breast images or for a phantom with breast-like features.
9. With the same WW and WL as used above, evaluate the entire phantom image for Artifacts. Examine the entire phantom for both broad area Artifacts (e.g., non-uniformities, blotches, and streaks), and for detailed Artifacts (e.g., black or white pixels, clusters of pixels, lines, or dust particles). Broad area Artifacts are typically best seen while observing the phantom image as a whole, not in pieces. Detailed Artifacts are typically best seen while observing the phantom image at full spatial resolution, where one pixel on the display matches one pixel in the image, or even in magnified form (with a magnification greater than 1.0).
10. Record the absence or presence of Artifacts.

> **Note:** It is not necessary to view the image on all available softcopy monitors. This is a test of image acquisition, not display. Monitor performance is assessed separately in test 8**.**

11. An automated algorithm which is provided by the manufacturer or QC company [46] may be used to reduce the effort required by the technologist for tests 3, 4 and 7 however, it is important to also inspect a flat-field image visually at regular intervals. It is also important for the automated program to give the results to the technologist immediately, before imaging on patients is performed.

> **Note:** An artifact is considered significant if it may mimic or obscure anatomic features**.**

12. If it is possible, display the processed ("processed" or "for presentation") image on a workstation that provides a region of interest analysis.
13. With the image displayed so that the signal difference to noise ratio (SDNR) contrast disc or well is clearly visible (see **Figure 3**), place a circular ROI of approximately 1 cm in diameter (approximately 0.8 cm2) over, and entirely contained within the contrast

object (disc or well). Use the same size (or as close as possible) ROI each time.

14. Measure the **mean pixel** value (MPV) and label this value "**A**". Record this number**.**
15. In a region outside but immediately adjacent to the disc, measure the **MPV and standard deviation** within a similarly sized ROI as used above as measurements **B** and **C** and record.

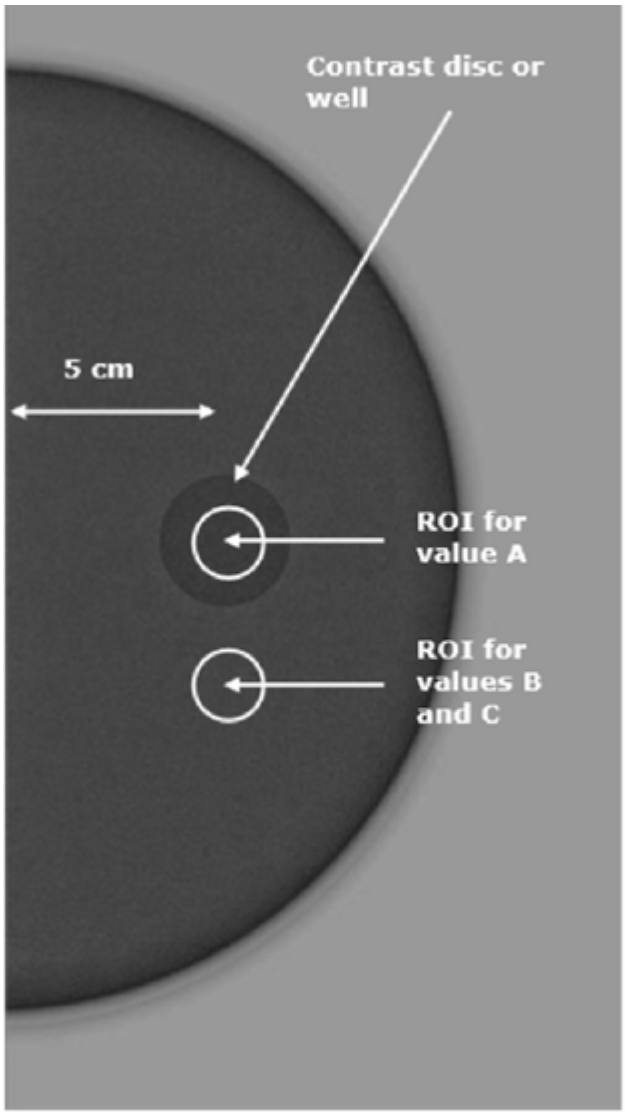


Figure 3: ROIs in the image of the weekly QC phantom used to calculate the signal difference to noise ratio.

16. Calculate the Signal Difference-Noise-Ratio (SDNR) as: **SDNR = (B-A)/C**
    If the calculation results in a number less than zero, simply ignore the negative sign.
17. An alternative method would be to use software built into the mammography system or workstation to automatically calculate SDNR, if the manufacturer has incorporated this test into their software. If Gladys software is running, this test will automatically be performed, and recorded.
18. Record the SDNR.

Precautions and Caveats

The ROI placed over the 25 mm diameter contrast area should not touch or extend beyond the edges of the disc or well. The ROI placed outside the disc should be to the left or right of the disc (looking at the image receptor).

When recording signal mean and standard deviation values, it is not necessary to write down all of the digits seen on the screen. Four significant digits (1234) are sufficient for the signal value. Three significant digits are sufficient for the noise (standard deviation) value. For example, if 123.4567 is displayed for the signal, record 123.4; if 9.87654 is displayed for the standard deviation, record 9.88.

Note: Operating levels should only be recalculated when changes are made to equipment such as replacement of tube or detector or re-calibration of detector, AEC or generator. If the unit is serviced, new operating levels may need to be calculated. **Almost all of these conditions require an equipment evaluation by the medical physicist.**

Performance Criteria and Corrective Action

Table 9: Tolerances when imaging weekly DSB Phantom

Parameter	**Acceptable tolerance with respect to baseline values**
mAs	± 10%
Mean pixel value “B” (MPV)	± 10%
Signal difference to noise ratio (SDNR)	± 10%

*In addition to the tolerances specified in **Table 9***:

- There should be no blotches of altered texture appearance
- There should be no observable lines or structural Artifacts
- There should be no “bright” or “dark” pixels evident

If any of the quantities mAs, MPV, SDNR or, in the case of CR systems, the exposure index is outside the action limits stated above, ***the test should be repeated*** if applicable. If the results remain unacceptable it may be appropriate to contact the responsible medical physicist for further advice in regard to implementing the recommendations listed below.

1. Ensure the correct image type (“processed” or “for presentation”) is used for signal measurements. Also check to see if service adjustment, ambient or detector temperature, recalibration of the detector system, or software changes might be

responsible for the readings appearing outside of tolerances. If no service adjustment has occurred, and if any of the values are still outside of tolerances on a repeat test, contact your authorized service representative.

2. If it is found that during repeated exposures with the same phantom in place the mAs vary excessively because the kV, target or filter has switched, the system may be operating at a "switching point". Under these circumstances, to facilitate consistency testing the medical physicist may advise adding a thin slab (5 – 10 mm of PMMA) so that the AEC operates at a different point.
3. If any Artifacts are visible which might mimic or obscure anatomic information or if any patterns are seen, a recalibration or flat-fielding of the digital detector may be needed for DR systems. Alternatively, there may be a foreign material on the compressor paddle, breast support or detector face. The compression plate and all accessible surfaces that are in the imaging field should be cleaned to remove any debris or extraneous material. After this has been done, repeat the test. If Artifacts persist, contact your authorized service representative. Do not image clients until the Artifacts are removed.

Time Frame for corrective action

Immediately. If this test fails, do not image clients until corrective action has been taken.

OBSP DM QC PHANTOM CONTROL CHART

MONTH												
DAY												
INITIAL												
THICKNESS												
TARGET												
FILTER												
Kv												
A												
B												
C												

WEEKLY mAs VALUE

+ 10 %												
Baseline												
- 10%												

WEEKLY SIGNAL VALUE (B)

+ 10 %												
Baseline												
- 10%												

WEEKLY SDNR VALUE ((B-A)/C)

+ 10 %												
Baseline												
- 10%												
ARTIFACT (Y/N)												
Pass/Fail												

Test #6: Display Monitor QC

The accuracy of the diagnosis and the efficiency of the radiologist are influenced by the conditions under which the mammograms are viewed. Viewing conditions can affect the diagnostic potential of even the best quality mammograms. These conditions are determined by the luminance and calibration of the monitors used for softcopy interpretation, the luminance of the view-boxes used for hardcopy interpretation, the ambient room illumination (the amount of light falling on the monitor and/or view-box surface), and good masking of films on the view-box.

Contrast is extremely important in the mammography image and is degraded by extraneous light. Consequently, monitors and view-boxes should be positioned to avoid incident light from windows, other monitors or view-boxes, and other sources of bright light, either direct or reflected. General lighting in the room should be diffuse and at a low level.

Objective

To ensure that images on the acquisition workstation monitor and on the monitor used for interpretation are displayed at adequate contrast and resolution.

Applicability

This test should be performed on all primary medical display devices used to interpret digital mammograms (radiologist's workstations), and on all secondary display devices as indicated. Secondary display devices include the monitor(s) attached to the acquisition workstation that is used to verify client image quality and/or the monitor used to manipulate and print the images (technologist's workstations).

Frequency

Weekly

Required Test Equipment

Modified AAPM TG18-QC test patterns with DICOM header to match processed images produced by each acquisition system used at the site. (This test pattern may be obtained from the DM unit's or the workstation's manufacturer.) For your convenience "right" and "left" versions of the test pattern are provided so that the display software on the radiologist's workstation can display the image on both monitors simultaneously. The "right" and "left" versions of the image are identical except for the mammographic projection (view) information contained in the header. The images can be loaded as client images in the same manner that previous images would be reviewed on the system. The images should be loaded onto your PACS system or workstation by the medical physicist when they perform the equipment evaluation. The images are also available on a DICOM compliant CD from OBSP Physics. These images should be stored on the system and should not be deleted.

Client images

A. Test Pattern Check - Test Procedure Steps

1. Before conducting this test, review the "Acceptable Viewing Conditions" worksheet posted by your medical physicist in the room where the radiologist's workstation is

located.

2. Ensure that the lighting conditions and room configuration match those described on the worksheet. Ensure that sources of bright light are not present in the room and are not being reflected from viewbox and/or monitor surfaces.
3. If differences exist between the acceptable configuration and the current configuration, adjust the room appropriately to ensure acceptable viewing conditions (i.e., turn off lights that should be off, close curtains, etc.).
4. For each primary and secondary display device view the modified TG18-QC pattern on each monitor used to display digital mammograms. For primary display devices there are typically two monitors used to display digital mammograms.
5. Display the AAPM TG18-QC test pattern image in the normal manner (as you would for a clinical image). Ensure the window-width (WW) is set to maximum and the window-level (WL) is set to half of maximum. Use the same WW and WL settings each time. See **Table 10** for the WW and WL settings applicable to each acquisition system image type.

Note: Once the window width and level settings are correctly set, it is often possible to "save" how the image is displayed so that next time the image is called up the settings are already correct. (Consult your applications training person for instructions**.**

Table 10: Window Width and Level Settings for Viewing AAPM TG18-QC Images

Acquisition System	Window-Width	Window-Level
GE2000D, Essential	4096	2048
IMS Glotto Image SDL	4096	2048
Hologic Selenia	4096	2048
Phillips MammoDiagnost	4096	2048
Phillips Microdose	65535	32768
Planmed Nuance	65535	32768
Siemens Inspiration, Novation	4096	2048

6. Evaluate subjectively the following aspects of the image (see **Figure 4**):

a. General image quality

- Check for evidence of smearing.
- Examine the image for evidence of other Artifacts
- Confirm that the vertical grayscale ramps that go from black to white along the sides of the pattern (regions A on **Figure 4**) demonstrate a smooth and continuous variation in brightness.

b. Geometric distortion:

- Check that the lines on the pattern are straight.
- Check that the image is centered on the screen.
- Check that the boxes appear square.

c. Luminance:

- The luminance squares frame the central portion of the pattern (regions B on **Figure 4**). They are numbered 2 through 17. Check that each is a distinct shade of gray, different from all the other patches.
- Examine the 0%-5% and the 95%-100% contrast squares (**Figure 5**) located at the ends of the luminance square frame. Record if the patches are visible on the relevant monitor QC charts.

d. Lettering (only required for primary display devices/radiologist's workstations): - Examine the text areas below the central region of the pattern (regions C on **Figure 4**). Letters spelling "QUALITY CONTROL" are printed in progressively fainter text over the backgrounds. Record the number of letters visible over the following backgrounds on.

- Dark
- Mid-gray
- Light

Currently it may not be possible to install and display the AAPM TG-18 QC pattern on all secondary display monitors. If that is the case at your site, follow the manufacturer's recommended monitor QC test for the monitor until it becomes possible to perform this test. Consult your physicist for more information.

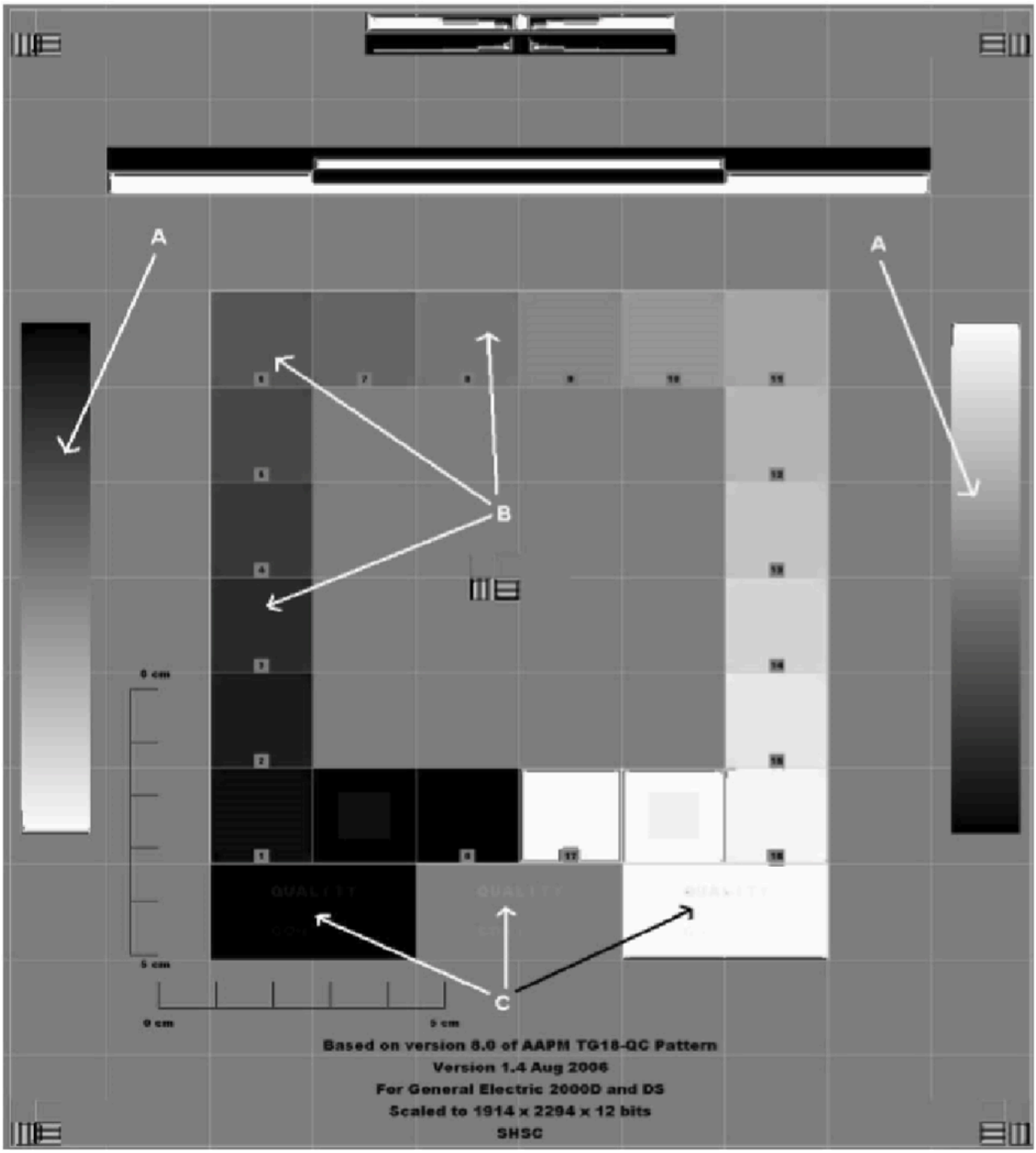


Figure 4: TG18-QC pattern with vertical gray-scale bars (A), luminance (B), and lettering (C) indicated.

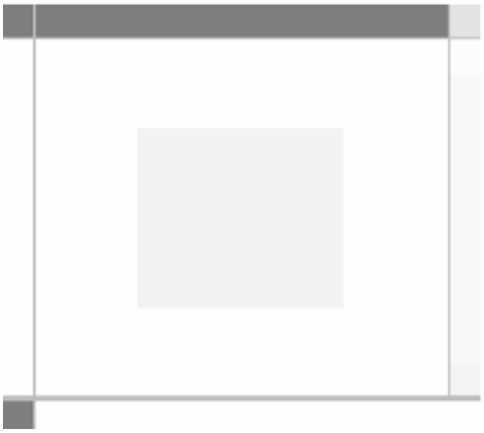


Figure 5: The 95-100% contrast square from the TG18-QC Test Pattern

B. Radiologist's Workstation Clinical Image Check

Test Procedure Steps

1. From the radiologist's workstation used for interpretation, locate a random clinical client file on the menu and open it for viewing. Load the same clinical image on all monitors for viewing (**Figure 6**). DO NOT change the default WW and WL settings.

NOTE: You do not have to use the same clinical image each week for this test. Simply choose a random image and place the same image on each monitor**.**

2. Evaluate the following items and record a pass/fail for each.
3. Verify that the background (non-breast) areas appear black and not gray.
4. Verify that the background (non-breast) areas appear to have the same level of blackness on all monitors.
5. Verify that corresponding areas of dense breast tissue appear to have the same brightness on all monitors.
6. Verify that corresponding areas of dense breast tissue appear to have the same contrast on all monitors.

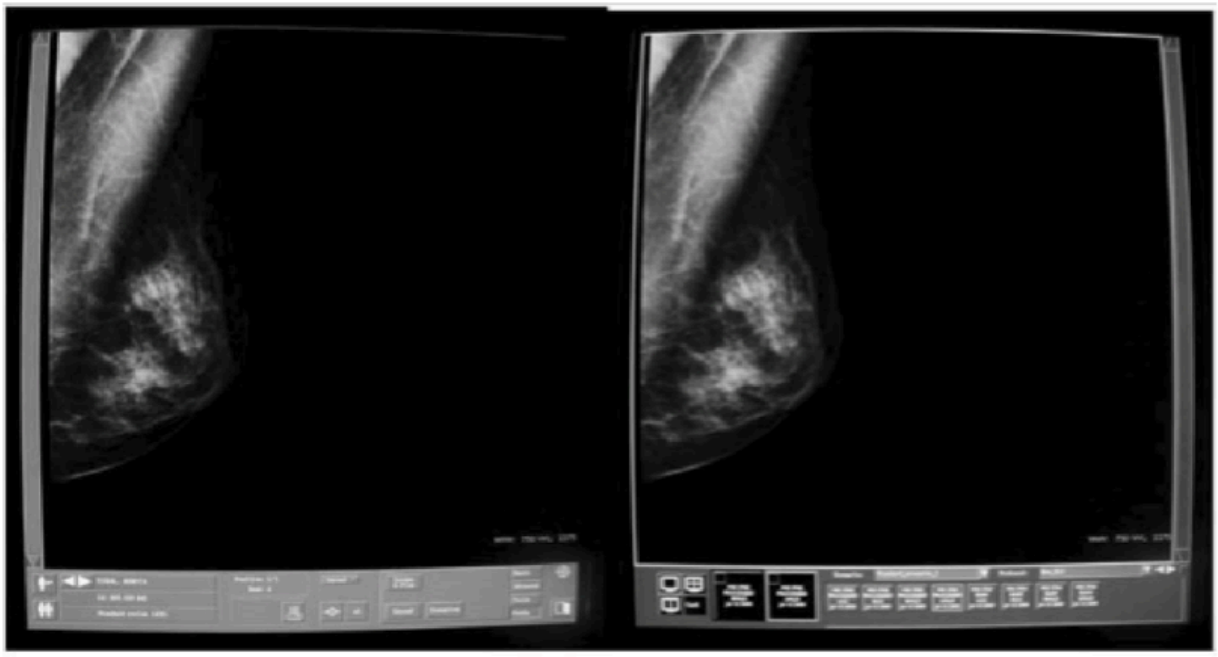


Figure 6: Radiologist's workstation with the same clinical image displayed on both monitors.

Precautions and Caveats

Viewing conditions for the secondary display devices should be as close as possible to those used for interpretation so that proper assessment of image quality may be made by the technologist.

Performance Criteria and Corrective Action

Viewing conditions for the radiologist's workstation should be as recommended by the medical physicist.

There should be no noticeable Artifacts in the TG18-QC image. This might include diagonal lines, flicker, blotches, non-uniform gray scale ramps, curved "straight" lines and bright or dark pixels. If Artifacts are evident, contact the monitor service person.

All 16 luminance patches in the TG18-QC should be distinct from each other in shade. If all 16 luminance patches are not distinct, it may be necessary to recalibrate the monitors. If recalibration fails to correct the problem, contact the monitor service person.

The smaller, 5% contrast squares (see **Figure 5**) should be visible in both the dark (05%) and light (95-100%) squares. If the squares with a 5% luminance difference are not visible, the monitors may need to be recalibrated. If recalibration fails to correct the problem, contact the monitor service person.

The letters "QUALITY CONT" should be visible in each of the three regions on the primary display devices (radiologist's workstations). If any of the letters in "QUALITY CONT" in any of the three regions on the primary display devices (radiologist's workstations) are not visible, the

monitors may need to be recalibrated, or the room lighting level changed. If recalibration fails to correct the problem, contact the monitor service person.

The images on all primary display monitors (i.e., radiologist's workstations) should appear to be visually identical (the same brightness and contrast). If the images do not appear visually identical, the monitors may need to be recalibrated. If recalibration fails to correct the problem, contact the monitor service person (PACS support or a qualified service engineer).

A clinical image check should establish that the background is black, that image contrast is adequate, and that the brightness or contrast settings of the two monitors are well matched. If these criteria are not met the source of the problem must be identified and corrective action taken, before any clinical examinations are interpreted from the review workstation. (See **Figure 7** for an example.) A qualified service engineer may be needed to make brightness and contrast adjustments on radiologist's workstation monitors and to recalibrate monitors.

All corrective actions should be recorded on the charts as appropriate.

Timeframe for Corrective Action

Immediately, before any further client images are interpreted on the review workstation, before any further client images are acquired using the acquisition workstation, or before the technologist's workstation is used for client images.

NOTE: Failure of a review workstation monitor to pass this test does not mean that client image acquisition must cease, only that interpretation of client images using that monitor must cease until the problem is corrected**.**

Failure of the acquisition station monitor requires the cessation of client imaging; unless the review workstation is located close enough to the acquisition station, so that each image can be checked before the next is taken.

Figure 7a)

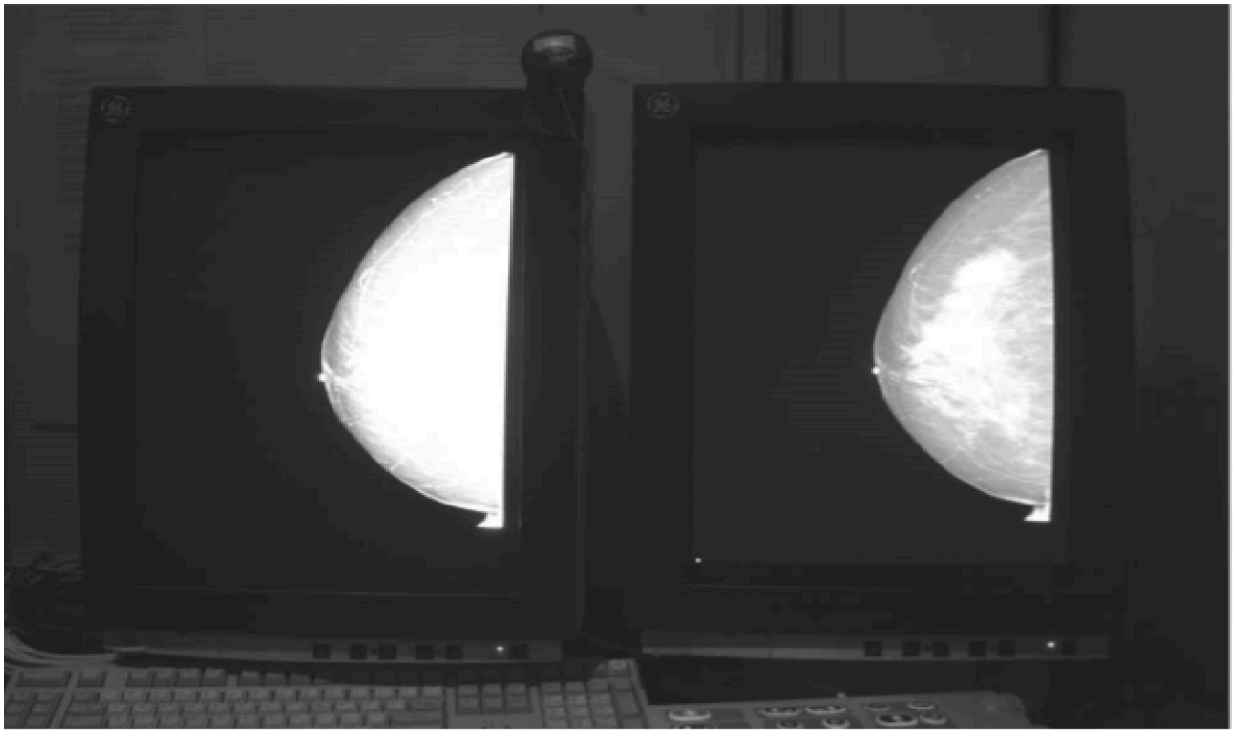


Figure7b)

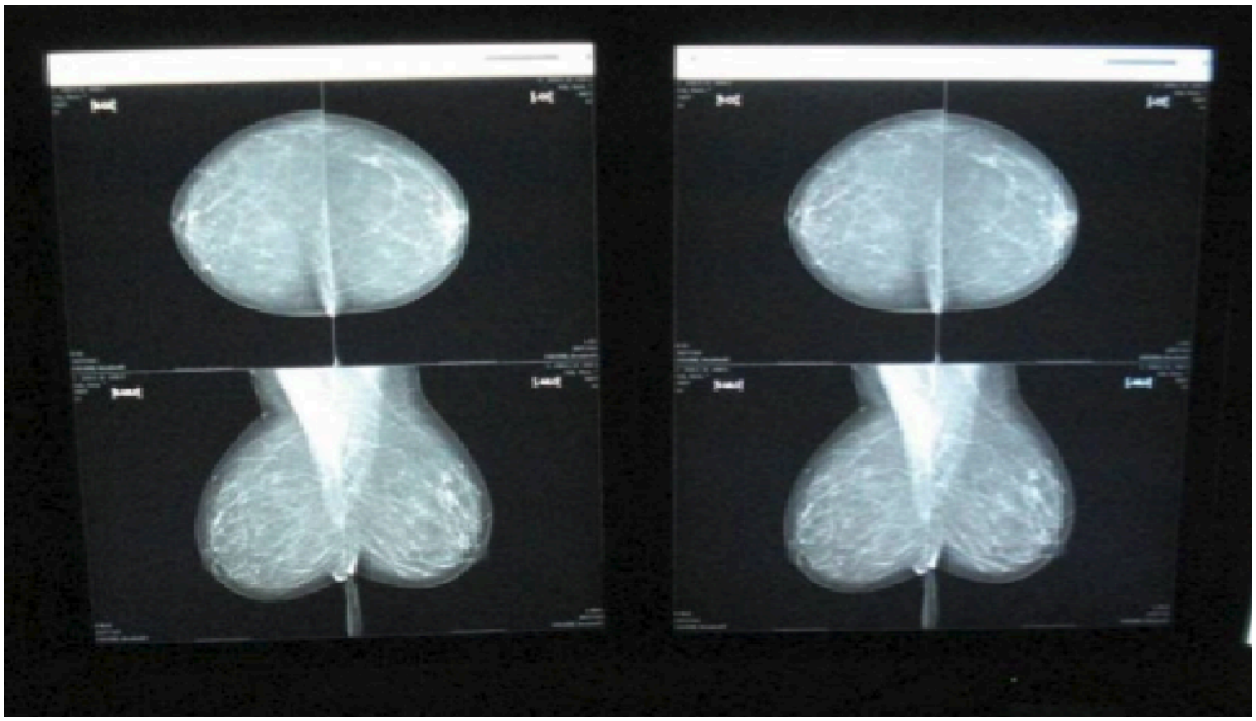


Figure 7: Unacceptable monitors: (a) - significant differences noted in the background blackness, brightness and contrast. (b) monitor on the left has a maximum luminance 20% greater than that on the right

Weekly Display Monitor QC – Review Workstation

Facility:_____ **Workstation Mfr.:**						**Room:**_____ **Monitor Mfr.:**						
Year:												
Month												
Day												
Initials												
Monitor	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**	**L**	**R**
General Image Quality (P/F)												
No smearing												
No Artifacts												
Ramps cont.												
Geometric Distortion (P/F)												
Lines Straight												
Pattern Centred												
Boxes Square												
Luminance (P/F)												
Patches Distinct												
0-5% Visible												
95-100% Visible												
# of Letters Visible (at least 11 or “QUALITY CONT”)												
Dark												
Mid-gray												
Light												
Clinical Image Check (P/F												
Background (non-breast) area is black												
Background areas on 2 monitors match												
Dense breast tissues on 2 monitors match												
Contrast on 2 monitors matches												
Overall Pass/Fail												

Remarks:

Date: Action:

_____ _____

_____ _____

Chart 5: Weekly Display Monitor QC – Acquisition Monitor

Facility:_____ **Workstation Mfr.:**												**Room:**_____ **Monitor Mfr.:**
Year:												
Month												
Day												
Initials												
General Image Quality (P/F)												
No smearing												
No Artifacts												
Ramps cont.												
Geometric Distortion (P/F)												
Lines Straight												
Pattern Centered												
Boxes Square												
Luminance (P/F)												
Patches Distinct												
0-5% Visible												
95-100% Visible												
Overall Pass/Fail												

Remarks:

Date: Action:

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

Test #7 - Viewboxes and Viewing Conditions

Objective

To assure that the viewboxes and viewing conditions are optimized and their performance stays constant over time.

Frequency

Weekly

Suggested Equipment

- Window cleaner
- Soft towels

Test Procedure

1. Clean viewbox surfaces using a cleaner recommended by the viewbox manufacturer and soft paper or cotton towels.
2. Ensure that all marks have been removed.
3. Visually inspect the viewboxes for uniformity of luminance.
4. Ensure that all viewbox masking equipment is functioning properly.
5. Visually check that sources of bright light are not being reflected from the viewbox surface.
6. Select **Admin>Quality control>Technologist tab>Viewboxes and Viewing Conditions** procedure on the Acquisition Workstation.
7. Select the **Mark Completed** button to label the status of this procedure as finished. Select **Yes** to mark the Quality Control procedure as completed.

Record Forms

Use the “Viewboxes and Viewing Conditions” form to record the results.

Data Analysis and Interpretation

None

Recommended Performance criteria and Corrective Action

Any marks that are not easily removed with window cleaner must be removed with a safe and appropriate cleaner. If viewboxes appear nonuniform, all of the fluorescent lamps must be replaced as soon as possible. If viewbox masks are difficult to use, appropriate service or modifications should be requested.

Failures must be corrected before clinical images are viewed on the viewbox.

9. Viewboxes and Viewing Conditions

DATE COMPLETED	INITIALS

DATE COMPLETED	INITIALS

Remarks

Date:	Action

BI-WEEKLY QUALITY CONTROL TEST PROCEDURES

These procedures should be conducted Bi-Weekly.

Test #1 - Compression Thickness Indicator

Objective

To assure that the indicated compression thickness is within tolerance.

Frequency

Bi-weekly (every two weeks)

Suggested Equipment

- ACR Mammographic Accreditation Phantom
- 7.5 cm QC or spot contact compression paddle

Test Procedure

Note: The first time you use the ACR phantom, measure the phantom thickness and record this measurement as the **Base** on the Compression Thickness Indicator chart.

1. Center the ACR phantom laterally on the image receptor and position it so the chest wall edge of the phantom is aligned with the chest wall side of the image receptor.
2. Install the 7.5 cm QC or spot contact compression paddle in the compression device.
3. Apply compression force of approximately 30 pounds (-133N) to the ACR phantom.
4. Record the thickness indicated on the compression device on the record form.
5. Select **Admin>Quality Control>Technologist tab>Compression Thickness Indicator** procedure on the Acquisition Workstation.
6. Select the **Mark Completed** button to mark the status of this procedure as finished. Select **Yes** to mark the Quality Control procedure as completed.

Records Form

Use “Compression Thickness Indicator” form to track the results.

Data Analysis and Interpretation

Subtract the actual thickness of the ACR phantom from the thickness indicated on the compression device and record the result on the record form.

Recommended Performance Criteria and Corrective Action

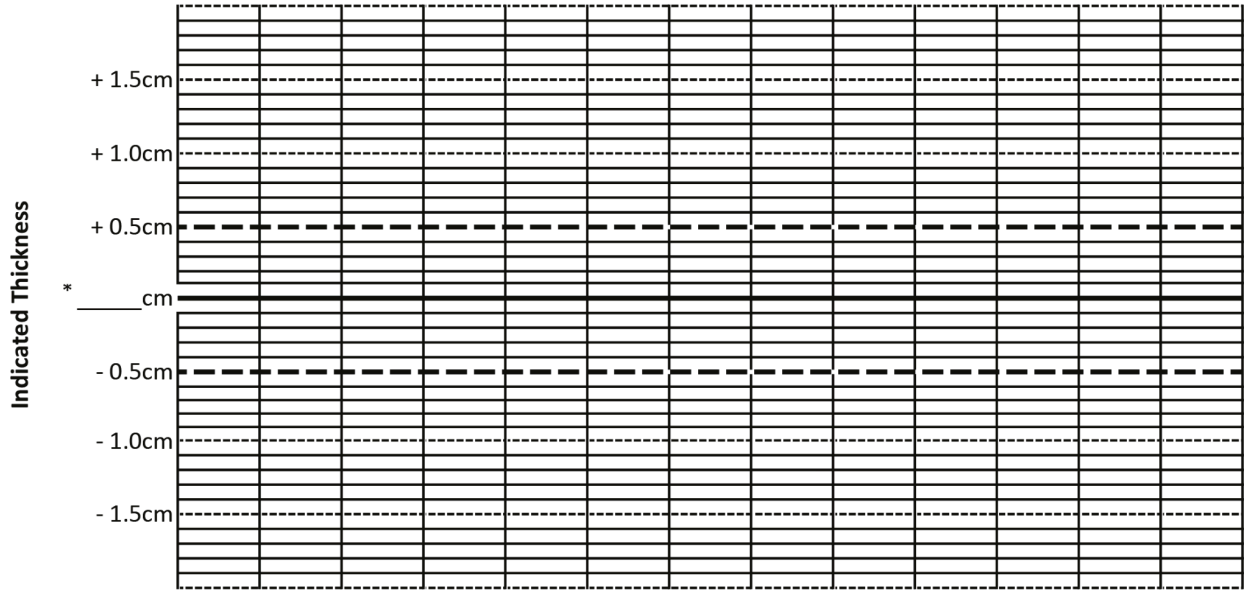
The compression thickness indicator must always be accurate to +/-0.5 cm from the actual thickness.

If the recommended performance criteria are not met, the source of the problem must be identified and corrective action must be taken within thirty days of the test date.

7. Compression Thickness Indicator

Year:													
Month:													
Date:													
Initials:													

Phantom Serial #:_____



**Record the physical thickness of the ACR Phantom in this space.*

Remarks

Date	Action

Test #2 - Thickness Indicator Quality Control testing for FAST Mode

Objective

Regular QC checks of the compression device in FAST mode are recommended to assure that the indicated compression thickness is consistent with the indicated thickness when FAST mode is disengaged.

Suggested Equipment

- ACR Mammographic Accreditation Phantom
- 18 x 24 cm flat compression paddle

Test Procedure

Note: If there is an acrylic disc glued to the phantom, placing the disc side below the paddle could cause some unnatural warping of the paddle, skewing the results. If the test does not appear to be passing when the disc is included under the paddle, it is recommended to reposition the phantom to prevent the disc from being compressed with the phantom.

1. Center the ACR phantom laterally on the image receptor and position it so the chest wall edge of the phantom is aligned with the chest wall side of the image receptor.
2. Install the 18 x 24 cm flat compression paddle in the compression device.
3. Disengage FAST mode if it has been engaged.
4. Lower the compression paddle and apply between 15 and 20 pounds of compression force to the ACR phantom.
5. Record the thickness indicated on the compression device on the record form for when FAST mode is disabled.
6. Release the compression device. Engage FAST mode.
7. Lower the compression device to apply between 15 and 20 pounds of compression force to the ACR phantom.
8. Record the thickness indicated on the compression device on the record form for when FAST mode is engaged.

Record Form

Use “FAST Mode Compression Thickness Indicator” form

Data Analysis and Interpretation

Subtract the thickness indicated without FAST mode from the thickness indicated with FAST mode engaged and record the result on the record form.

Recommended Performance criteria and Corrective Action

The thickness indicated with FAST mode must be within +/-0.5 cm of the thickness indicated when FAST mode is not engaged. If the recommended performance criteria are not met, FAST mode should not be used for patient imaging. The source of the problem must be identified, and corrective action must be taken within thirty days of the test date.

FAST Mode Compression Thickness Indicator

Phantom Serial # _____

Month	Year	Day	Initials	Indicated Thickness w/FAST mode disabled (cm)	Indicated Thickness w/FAST mode engaged (cm)	Difference (disabled-engaged)	Difference within +/-0.5 cm? (pass/fail)

Action Limits: The thickness indicated with FAST mode must be within +/-0.5 cm of thickness indicated when FAST mode is not engaged.

REMARKS:

Date	Action

MONTHLY QUALITY CONTROL TEST PROCEDURES

These procedures are to be conducted on a monthly basis. Record the performance of all weekly QC tests on the provided charts.

Test #1 - Monthly/Quarterly/Semi Annual Tests Checklist

Test #2 - Monthly Checklist of Exam Room Objective

Test #3 - Chief Radiologist Review

Test #1: Monthly/Quarterly/Semi Annual Checklist

This checklist is provided to help ensure that all QC tests are completed. These Checklists provide a quick reminder of when quality control tests are due and also provide a record that tasks have been completed. Each time a task is completed, the individual carrying out the task should initial the appropriate area on the checklist.

MAP ID#:_____

DIGITAL MAMMOGRAPHY QUALITY CONTROL CHECKLIST

Monthly/Quarterly/Semi-Annual Tests

Please photocopy this document to submit 12 consecutive months of QC checks (6 months for new applicants or unit replacement).

ROOM: _____ YEAR: _____

Checkmark = Pass/Adequate; X=Fail; Initial when complete

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
INITIALS												
MAP PHANTOME IMAGE (MONTHLY; RECOMMENDED)												
MECHANICAL INSPECTION (MONTHLY)												
CHIEF RADIOLOGIST QC REVIEW (MONTHLY)												
REPEAT ANALYSIS <2% CHANGE (QUARTERLY)												
COMPRESSION 25-45 LB (SEMI-ANNUALLY)												
MEDICAL PHYSICIST SURVEY (ANNUALLY)												
MEDICAL PHYSICIST QC REVIEW (ANNUALLY)												

ADDITIONAL CR QUALITY CONTROL (IF APPLICABLE)

CR PLATE ARTIFACTS (MONTHLY)												
MTF (QUARTERLY FOR SCANNED IMAGE ACQUISITION UNIT/CR)												
CR PLATE SENSITIVITY MATCHING (SEMI-ANNUALLY)												

ADDITIONAL PRINTER QUALITY CONTROL (IF APPLICABLE)

LASER PRINTER ARTIFACTS												
PRINTED IMAGE QUALITY												
FILM DIGITIZER (QUARTERLY)												

DATE	TEST	COMMENTS
_____	_____	_____
_____	_____	_____

Test #2 - Visual Checklist

Objective

To assure that system indicator lights, displays, mechanical locks and detents are working properly and that the system is mechanically stable.

Frequency

Monthly

Suggested Equipment

None

Test Procedure

1. Review all items listed on the visual checklist and indicate their status. Be sure to rotate the C-arm the way you would for patient imaging.
2. Date and initial the checklist where indicated.
3. Select **Admin>Quality Control>Technologist tab>Visual Checklist** procedure on the Acquisition Workstation.
4. Select the **Mark Completed** button to label the status of this procedure as finished. Select **Yes** to mark the Quality Control procedure as completed.

Record Forms

Use the “Visual Checklist” form to record the results.

Data Analysis and interpretation

None

Recommended Performance Criteria and Corrective Action

Each item in the Visual Checklist should pass and receive a check mark. Items not passing the visual checklist should be replaced or corrected immediately.

If the recommended performance criteria are not met, the source of the problem must be identified and corrective action must be taken within thirty days of the test date.

10. Visual Checklist

		Year											
		Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Date												
		Tech Initials												
C-arm/Gantry	SID indicator or marks													
	Angulation indicator													
	Detents/Locks (all)													
	Collimator Light													
	Smoothness of motion													
	Grid function													
	Compression device function													
	Compression thickness display													
	Compression force display													
Acquisition Workstation	Glass Shield													
	Exposure switches													
	Power Controls													
	Monitors													
	Technique Charts													
Accessories	Foot Pedals													
	Compression Paddles clean and not cracked													
	Faceshields clean and not cracked													
	Disinfection Materials Available													
Other	_____													
	_____													
	_____													
	_____													

P = Pass F = Fail NA = Not Applicable

Test #3 - Repeat/Reject Analysis

Objective

To determine the number and cause of repeated/rejected mammograms

Frequency

Monthly

Note: In order for retake rates to be statistically meaningful, a patient volume of at least 250 patients is needed.

Suggested Equipment

None

Test Procedure

Select **Admin>Quality Control>Technologist tab>Reject Analysis** procedure on the Acquisition Workstation.

Select the **Start** button.

Select the **Last Quarter,** or **Last 30 days,** or set the starting and the ending date.

Select the **Operators.** (do a total rate for all & for each individual operator)

Select the **Go** button to run and display the report.

If you would like to save the report to a file, select the **Save HTML** or **Save CSV** button. If you would like to print the file, select **Print.** (Please print and file reports)

Select the **Back** button or run another report by repeating Step 3 through Step 6.

Select the **Back** button. Select **Yes** to mark the Quality Control procedure as completed.

Repeat Step 1 through Step 8 for the **Repeat Analysis** procedure.

Record Forms

Use the Mammography Repeat/Reject Analysis forms incorporated into the Acquisition Workstation Repeat/Reject Analysis software or the corresponding "Repeat/Reject Analysis" section of the Monthly, Quarterly, and Semi-Annual form to keep track of when this test was performed.

Data Analysis and Interpretation

The data presented in the Mammography Repeat/Reject Analysis form provide the

repeat/reject statistics.

Precautions and caveats

All images that are repeated should be included in the repeat analysis, not just those the radiologist asked to have repeated. Some facilities may keep repeated images in the client study along with good images, rather than rejecting them. These repeated images must be included in the repeat analysis. At a minimum, **the retake analysis must be done quarterly.** This process of reviewing the rejected images provides mammographic technologists with an educational benefit. Many higher workload facilities choose to conduct a retake analysis monthly. Including examinations on at least 250 clients (approximately 1000 exposures) allows for reasonable statistics to be calculated. Collecting rejected images from a larger number of clients is encouraged because it will yield more reliable data when evaluating causes for retakes. Facilities that do not examine 250 clients in a quarter should still assess retake images at least quarterly to determine the primary causes of repeated images and reap the educational benefit of the process.

There is a real danger that technologists may alter their routine procedures or criteria for accepting images if they know their repeated images will be analyzed. This should be avoided. Many digital mammography acquisition stations include capabilities for logging the causes for rejecting images in software and generating a summary report. This can simplify the process of the retake analysis; however caution is needed. The logs generated by the software may not catch all retakes - potentially missed areas may include aborted exposures, retakes due to equipment malfunction, and retakes where the original image is not rejected. Also, the reject logging software may not group the causes for rejection in the same manner as suggested in this manual.

Performance Criteria and Corrective Action

The overall repeat rate should ideally be 2% or less, but a rate of 5% or less is probably adequate if the radiologist and medical physicist agree this is a reasonable level. These rates should be based on an image volume of at least 250 clients to be meaningful. A “Reason for Repeat” that is significantly higher than the others indicates an area for potential improvement.

If the repeat rate exceeds the selected acceptance level of either 2% or 5%, or if the repeat or reject rate changes from the previously measured rate by more than 2%, the change should be investigated and corrective action taken if necessary. For example, if the previous repeat rate was 1.8% and the new repeat rat is 4.2%, then the follow-up described above is required. A repeat rate of below 0.5% can indicate the radiologists are accepting/interpreting sub-standard images for the sake of expediency, since there will always be some clients for whom positioning the breast and obtaining a proper exposure is quite difficult.

Any corrective actions should be recorded on the bottom of the Repeat Analysis chart. In addition, the effectiveness of the corrective actions should be assessed by performing another repeat analysis after the corrective actions have been implemented.

If the primary cause of excessive repeated exposures is an equipment or detector problem it

should be brought to the attention of the service engineer.

If the primary cause of excessive repeated exposures is a positioning or other motion problem, corrective action such as additional training on positioning and compression should be taken.

Timeframe for Corrective Action

Within 30 days of the repeat analysis date.

Clinic Name/Address: _____ From:_____ To:_____

Technologists: ALL

Mammography Repeat Analysis

Projection

Reason:	Left CC	Right CC	Left MLO	Right MLO	Left Other	Right Other	Sub-Totals	% of Total
1. Position								
2. Patient Motion								
3. Detector Underexposure (excessively noisy images)								
4. Improper Detector Exposure (saturation)								
5. Artifacts								
6. Incorrect Patient ID								
7. X-ray Equipment Failure								
8. Software Failure								
9. QC								
10. Other								

TOTALS: _____

Totals with Reasons:	
Total Exposures:	
Ratio:	

Remarks: _____

_____

Corrective Action: _____

_____

Clinic Name/Address: _____ From:_____ To:_____

Technologists: _____(do one for each individual operator)

Mammography Repeat Analysis

Projection

Reason:	**Left CC**	**Right CC**	**Left MLO**	**Right MLO**	**Left Other**	**Right Other**	**Sub-Totals**	**% of Total**
1. Position								
2. Patient Motion								
3. Detector Underexposure (excessively noisy images)								
4. Improper Detector Exposure (saturation)								
5. Artifacts								
6. Incorrect Patient ID								
7. X-ray Equipment Failure								
8. Software Failure								
9. QC								
10. Other								

TOTALS: _____

Totals with Reasons:	
Total Exposures:	
Ratio:	

Remarks: _____

_____

Corrective Action: _____

_____

Clinic Name/Address: _____ From:_____ To:_____

Technologists: ALL

Mammography Reject Analysis

Projection

Reason:	Left CC	Right CC	Left MLO	Right MLO	Left Other	Right Other	Sub-Totals	% of Total
1. Position								
2. Patient Motion								
3. Detector Underexposure (excessively noisy images)								
4. Improper Detector Exposure (saturation)								
5. Artifacts								
6. Incorrect Patient ID								
7. X-ray Equipment Failure								
8. Software Failure								
9. Blank Image								
10. Wire Localization								
11. Aborted AEC Exposure								
12. QC								
13. Other								

TOTALS: _____

Totals with Reasons:	
Total Exposures:	
Ratio:	

Remarks: _____

_____

Corrective Action: _____

_____

Clinic Name/Address: _____ From:_____ To:_____

Technologists: _____ (do one for each individual operator)

Mammography Reject Analysis

Projection

Reason:	Left CC	Right CC	Left MLO	Right MLO	Left Other	Right Other	Sub-Totals	% of Total
1. Position								
2. Patient Motion								
3. Detector Underexposure (excessively noisy images)								
4. Improper Detector Exposure (saturation)								
5. Artifacts								
6. Incorrect Patient ID								
7. X-ray Equipment Failure								
8. Software Failure								
9. Blank Image								
10. Wire Localization								
11. Aborted AEC Exposure								
12. QC								
13. Other								

TOTALS: _____

Totals with Reasons:	
Total Exposures:	
Ratio:	

Remarks: _____

_____

Corrective Action: _____

_____

Test #4 - Chief Radiologist Review

Each CAR Accredited facility has a lead interpreting physician who has the responsibility of ensuring that the quality assurance program meets all CAR requirements. The CAR recommends that the lead interpreting physician reviews the QC technologist's test results at least once every 3 months.

In addition, the medical physicist must review the results of the technologists' QC at least semi-annually. Spaces are provided in the monthly, quarterly and semi-annual DM QC checklist for the lead interpreting physician and medical physicist to initial their reviews.

QUARTERLY/SEMI-ANNUAL QUALITY CONTROL TEST PROCEDURES

The following tests should be carried out semi-annually. Record the performance of all weekly QC tests on the provided charts.

Test #1 - Monthly/Quarterly/Semi-Annual Tests Checklist

Test #2 - Compression Force

Test #1 - Monthly/Quarterly/Semi-Annual Checklist

This checklist is provided to help ensure that all QC tests are completed. These checklists provide a quick reminder of when quality control tests are due and also provide a record that tasks have been completed. Each time a task is completed, the individual carrying out the task should initial the appropriate area on the checklist.

DIGITAL MAMMOGRAPHY QUALITY CONTROL CHECKLIST **MAP ID#_____**

MONTHLY/QUARTERLY/SEMI-ANNUAL TESTS

Please photocopy this document to submit 12 consecutive months of QC checks (6 months for new applicants or unit replacements).

ROOM:_____YEAR: _____

Check mark = Pass/Adequate; X = Fail; Initial when complete

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
INITIALS												
MAP PHANTOM IMAGE (Monthly; recommended)												
MECHANICAL INSPECTION(Monthly)												
CHIEF RADIOLOGIST QC REVIEW (Monthly)												
REPEAT ANALYSIS <2% CHANGE (Quarterly)												
COMPRESSION 25-45LBS (Semi-Annual)												
MEDICAL PHYSICIST SURVEY (Annual)												
MEDICAL PHYSICIST QC (Annual)												
ADDITIONAL CR QUALITY CONTROL (IF APPLICABLE)												
CR PLATE ARTIFACTS (Monthly)												
MTF (Quarterly for scanned image acquisition units/cr)												
CR PLATE SENSITIVITY MATCHING (Semi-Annual)												
ADDITIONAL PRINTER QUALITY CONTROL (IF APPLICABLE)												
LASER PRINTER ARTIFACTS												
PRINTED IMAGE QUALITY												
FILM DIGITIZER (Quarterly)												

DATE **TEST** **COMMENTS**

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Test #2: Compression Force

Objective

To assure that the mammography system can provide adequate compression in the manual and power assisted mode and that compression is controlled.

Frequency

Semi-annually (every 6 months), or whenever increased or reduced compression is suspected.

Suggested Equipment

- Bathroom scale
- Towels
- 18 x 24 cm flat compression paddle or 24 x 29 cm flat compression paddle

Test Procedure

1. Select **Admin>System Defaults>Comp Mode** on the Acquisition Workstation. Change to **Full.**
2. Place a towel on the image receptor platform to protect the image receptor platform.
3. Place the bathroom scale on the towel with the dial or read-out positioned for easy reading. Locate the center of the scale directly under the compression device.
4. Place one or more towels on top of the scale to prevent damage to the compression paddle.
5. Using the initial power drive, activate the compression device and allow it to operate until it stops automatically.
6. Read and record the compression force on the form.
7. Release the compression device.
8. Using the initial manual drive, move the compression device downward until it stops.
9. Read and record the compression force on the form.
10. Release the compression device.
11. Select **Admin>System Defaults>Comp Mode** on the Acquisition Workstation. Change to **Dual**.
12. Select **Admin>Quality Control>Technologist tab>Compression Test** procedure on the Acquisition Workstation.
13. Select the **Mark Completed** button to label the status of this procedure as finished. Select **Yes** to mark the Quality Control procedure as completed.

    Note: 1 deca Newton (daN) = 10 Newton = 2.2 lbs of force

Precautions and Caveats

If the safety mechanism is not properly adjusted, it may be possible to damage the compression device and associated components. If the compression exceeds 200N (20 daN or approximately

45 pounds) in the power drive mode, immediately release the compression device and ask a service engineer to make the appropriate adjustments.

Some units will allow the operator to apply manual pressure beyond this limit. This is not recommended but may be done at the discretion of the technologist.

Performance Criteria and Corrective Action

In the initial power driven mode, a compression force of 8 to 15 daN (18 - 34 lbs) must be available and further powered compression should not exceed 20 daN (45 lbs).

Under manual adjustment of compression, a compression force of at least 15 daN (34 lbs) should be achievable but should not exceed 30 daN (67 lbs).

If the performance criteria are not met in the manual or the power driven modes, a service engineer should make the appropriate internal adjustments of compression force.

Timeframe for Corrective Action

Immediately; before any further clients are imaged.

MAMMOGRAPHY COMPRESSION TEST

(Quarterly)

Clinic Name:_____ Year:_____

DATE	PRESSURE (lbs or daN)	MEETS CRITERIA (INDICATE YES OR NO)	ACTION TAKEN	TECH INITIALS

RADIOGRAPHIC PROCEDURES

Reviewed July 2024
Reviewed June 2023
Revised April 2022
Reviewed March 2021
Reviewed December 2020
Revised September 2019
Revised April 2019
Revised November 2017
Reviewed November 2012
Reviewed December 2003
Revised January 23, 2002
Reviewed January 04, 2000
Revised January 12, 1999
Revised December 1998

RADIOGRAPHIC PROCEDURES

EXAMINATION PROTOCOLS

NO PATIENT IS TO BE EXAMINED WITHOUT A REQUISITION.

Ask the patient if he/she was given a requisition for the examination. The requisition is a "source document" which must accompany the file of all patients examined at the clinic. It must be filled out and signed by the referring doctor and must be filed with the patient's report and kept for a minimum of six years. **A complete requisition must include the patient's name, and 1 other identifying factor, type of examination, and referring physician's signature.**

If the patient does not have a requisition, then you must call the referring doctor's office and obtain the necessary information and authorization, fill out and sign a new requisition on behalf of the referring doctor.

No additional examinations will be performed unless first verified by the referring physician or reporting radiologist

If there is any doubt as to why the patient has been sent to the clinic, you must contact the referring physician before proceeding any further.

In accordance with the Health Care Consent Act, after an appropriate explanation of the procedure, a verbal consent must be received. Verbal consent may be expressed by a statement or implied by the patient's conduct. For children and incompetent adults, authorization from a parent or other responsible person (i.e. referring physician) should be obtained.

A complete set of radiographic routines is located in the TRUE NORTH IMAGING Protocol Manual and in each X-ray room. Technique charts are located in each X-ray room, and are calculated by body part thickness in cm, and dated according to the last revision.

GENERAL COMMENTS

The procedures in this section are the radiographic routines of True North Imaging . In this manual, a "view" is taken to mean a specific projection of a body part (i.e., PA projection of the hand). A "routine" is taken to mean a set of views, which demonstrate a specific body part (i.e., hand). This page details the form of the routines, and lists some general policies, which should be followed for all examinations.

Each routine contains three sections:

1. The first indicates the specific views which comprise the routine.
2. The second recommends cassette size for each view (for **CR radiography only**, not relevant in DR radiography). The listed size or smaller, should be used whenever possible without compromising exam quality.
3. The third indicates comments for the exam.

If a patient has had a recent exam of the same body part at TRUE NORTH IMAGING , **read the previous report** for pertinent information. *eg. nipple markers to be used? Apical lordotic view (for pulmonary nodule) or Expiratory phase frontal view (to rule out pneumothorax) to be obtained also?*

ALARA, As Low As Reasonably Achievable is a generic stance regarding radiation exposure, the goal of which is the least and lowest exposure possible and/or practicable, vis-à-vis licensed use of radioactive materials, the economics of improving nonradioactive technologies, the benefits to public health and safety, and other socioeconomic considerations.; The free dictionary.com

At TNI, the ALARA principle is applied at ALL examinations,

The potential benefits and risks of each examination is considered.

ALARA is observed when adjusting controls that affect the acoustic output and by considering both the transducer dwell time and overall scanning time for Sound Energy procedures (Diagnostic Ultrasound) as well as radiation and dose reduction for radiation related procedures (X-Ray, Bone Mineral Density &Mammography).

Practicing ALARA requires that users do all of the following for:

X-ray, BMD & Mammography:

Whenever possible, the application of ionizing radiation should be limited to anatomical area of concern using:

Time: Reducing exposure time, directly reduces radiation dose

Distance: increasing the distance between you and radiation source will reduce radiation exposure

Shielding: lead or lead equivalent shielding for X-rays and gamma rays is very effective in reducing radiation exposure. Utilization of specific anatomical shielding when appropriate

Collimation in Xray: whenever possible without omitting relevant anatomy

Should you find a discrepancy in the previous report, please bring it to the attention of the radiologist. The radiologist will issue an addendum report if the previous was done in house. If it is an outside previous, the radiologist will contact the facility that it was performed at and inform them of the discrepancy.

Revised 24/03/2025

*Confirm the **BODY PART** and **SIDE** (RIGHT vs LEFT) ordered on Clinical Requisition matches*:

1. that mentioned by patient
2. that on Exam Bag Label/Billing
3. the radiologic MARKER that you use on views (e.g., R or L)

Document on Exam Bag Label the **total # of radiographic views obtained** (to minimize radiologist reporting on incomplete study).

Please remind patients to **remove jewelry** and pay attention to things that may cause artifact (hair accessories, clothing artifact (buttons, zippers), and label as artifact on image or write comment on bag label if object could be misinterpreted as foreign body).

Be attentive regarding **patient positioning** (eg. using sandbags/weights if necessary).

Physical markers are to be present during the exposure (LT or RT) electronic markers can be used on rare instances. Use a **BB marker** to demarcate **area of concern** (eg. lump, bump, focal area of rib pain).

Collimate appropriately for all radiographic exams. Image using the **ALARA** (As Low Dose as Reasonably Achievable) Principle.

Gonadal shielding must be used whenever possible. For the purposes of this manual, a child is defined as being 15 years of age or less.

Ask any female who is of child-bearing age if there is any chance that she could be pregnant. Observe the '10-day rule' whenever possible (i.e., radiography to be performed in the first 10 days of menstrual cycle/10 days within LMP since risk of pregnancy is minimal).

OVEREXPOSURE PROTOCOL

Definition:

An incident or inadvertent exposure which results in a significant additional dose to a patient (pp. 62-63, HARP guidelines).

Action:

If such an incident occurs, the technologist should notify the RPO, the medical Director and the direct supervisor immediately.

The RPO must in turn notify the Director of X-ray Safety, in writing, of the steps being taken to investigate and rectify any existing problems (Ontario regulation 45-84, sections 7:1314). This must be received by the Director within 5 days.

CONTACTING RADIOLOGIST:

The reporting radiologist must be contacted prior to the patient leaving the clinic for any urgent matter including but not limited to:

- pleural effusions
- pneumothorax
- obvious fractures
- bowel obstructions
- foreign bodies
- masses

SINUS X-RAY'S

The Ontario Medical Association (OMA) and Ministry of Health (MOH) have delisted sinus radiographs (X008) from the OHIP schedule. Sinus x-rays will no longer be covered by OHIP, however, if a physician orders a sinus x-ray, we can charge privately for that exam. Please ensure that the physician and the patient are aware that this exam is not covered by OHIP and that the patient will be charged $40.00.

HEAD AND NECK

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Skull - Adult	1. Lateral 2. Caldwell 3. Basal (submentovertex) 4. Townes	10x12 10x12 10x12 10x12	If limited by patient condition, eg. TRAUMA, do only **Lateral** and **AP** (not PA or additional views) and call radiologist stat
Skull – Child	1. AP 2. Lateral	10x12 10x12	
Facial Bones	1. Waters 2. Caldwell 3. Lateral	8x10 8x10 8x10	Include area of interest (eg. do additional zygomatic arch views if necessary)
Sinuses (no longer covered by ohip, if ordered patient to be billed)	1. Waters 2. PA 3. Lateral	8x10 8x10 8x10	Must be done upright. For a child, obtain lateral with head and body in true lateral with child breathing in through nose at time of exposure.
Mandible	1. PA 2. Townes 3. Both Lateral Obliques 4. Basal (submentovertex)	8x10 8x10 8x10 8x10	 3. tube angulation 30° cephalad 4. when possible
Temporomandibular Joints	1. Both Schullers views with a) open mouth b) closed mouth 2. Townes 3. PA	8x10 8x10 8x10	1. 25° caudad 2. 25° caudad
Mastoids	1. Townes 2. Basal 3. Schullers of each side 4. Stenvers of each side	8x10 8x10 8x10 8x10	1. 25° caudad

HEAD AND NECK (Continued)

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Nasal Bones	1. Both Laterals 2. Waters	8x10 8x10	1. coned down lateral
Orbit for Foreign Body (not pre-MRI)	1. Modified Waters 2. Single Lateral	8x10 8x10	Coned to affected eye for Waters-OML 25°, beam 90°, eyes closed
Orbit for MRI	1. Modified Waters 2. Single Lateral	8x10	Include both orbits.
Orbit for Fracture	1. Both Laterals 2. Caldwell 3. Townes 4. Waters	8x10 8x10 8x10 8x10	1. coned
Salivary Glands - Parotid	1. True Lateral Mandible 2. Lateral Oblique 3. PA Mandible	8x10 8x10 8x10	1. with open mouth 2. of affected side 3. with cheek blown out, and affected side turned 10° away from film
Salivary Glands - Submandibular	1. True Lateral Mandible 2. PA Mandible	8x10	1. with tongue depressed
Neck for Soft Tissue (including Adenoids)	1. AP Cervical Spine 2. Lateral	10x12 10x12	2. soft tissue technique, during Modified Valsalva maneuver

VERTEBRAL COLUMN

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Cervical Spine	1. AP 2. AP Odontoid 3. Lateral 4. Both Obliques 5. Swimmers if C7-T1 not well seen	8x10 8x10 10x12 8x10	-Obliques should be exposed with a 15° caudad tube angulation for PA obliques, and 15° cephalad angle for AP obliques. -For children, omit obliques. -may be requested to do flexion & extension lateral views
Thoracic Spine	1. AP 2. Lateral 3. Swimmer's [4) coned down lateral at thoracolumbar junction]	14x17 14x17 10x12 10x12	3. omit Swimmer's view for child [4) if you see a compression fracture at lower thoracic or upper lumbar spine, *if not well characterized on routine lateral view*]
Lumbar Spine – Adult > 35 years old	1. AP 2. Lateral 3. Both Obliques 4. Lateral L5-S1 coned [5) coned down lateral at thoracolumbar junction]	14x17 14x17 10x12 8x10 10x12	1. to include lower thoracic [5) if you see a compression fracture at lower thoracic or upper lumbar spine*, if not well characterized on routine lateral view*] -may be requested to do flexion and extension lateral standing views
Lumbar Spine – Child or Adult < 35 yrs old	1. AP 2. Lateral	14x17 14x17	1. to include lower thoracic spine
Sacrum	1. AP 2. Lateral	8x10 8x10	1. 20° cephalad upshot
Coccyx	1. AP 2. Lateral	8x10 8x10	1. 10° caudad
Sacroiliac Joints	1. AP 2. Obliques for Both Sides	8x10 8x10	1. 10-25° cephalad, knees flexed over pad
Spine for Scoliosis	1. AP Standing 2. Lateral Standing	14x17 14x17	Include iliac crest on lumbar views. Omit 2) lateral for child

*All Chiropractic views must be done upright

PELVIS AND HIPS

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Pelvis - Recent Injury	1. AP 2. Both Obliques/Judet views	14x17 as required	1. of entire pelvis, toes inverted 2. 45° obliqued
Pelvis - Inlet & Outlet Views	1. AP 45° caudad 2. AP 45° cephalad	14x17 14x17	Ordinarily requested following routine views of severe pelvic fracture.
Pelvis - Non-injury	1. AP	14x17	1. legs abducted & toes inverted
Pelvis and Both Hips	1. AP Pelvis and hips 2. Both Frog leg Laterals	14x17 10x12	1. legs abducted & toes inverted 2. **separate** laterals in frog position for Adult
Hip - Adult	1. AP Pelvis and hips 2. Frog leg Lateral of affected hip	14x17 10x12	
Hip - Osteoarthritis	1. AP Pelvis 2. AP of affected hip 3. Frog leg Lateral of affected hip	14x17 10x12 10x12	
Hip - Child	1. AP pelvis and both hips 2. Frog leg Lateral of **both** hips together	as required	Lateral in frog position to include both hips with **gonadal shielding**.

LOWER EXTREMITY

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Femur	1. AP 2. Lateral	17x17 17x17	
Knee - Adult	1. Lateral 2. PA 3. 20 Skyline 4. Both Obliques	8x10 8x10 8x10 8x10	3. AP if necessary 4. omit skyline if patient is unstable
Knee - Osteoarthritis	1. Bilateral PA standing 2. Lateral of affected side 3. Skyline of affected side 4. Tunnel of affected side	8x10 8x10 8x10 8x10	
Knee - Child	1. Lateral 2. PA	8x10 8x10	2. AP if necessary
Tibia/Fibula	1. AP 2. Lateral	As required	
Ankle	1. AP 2. Lateral 3. Mortise view	single 10x12	Keep foot dorsi-flexed where possible.
Foot	1. AP/dorsiplantar 2. Medial Oblique 3. Lateral	single 10x12 for AP & Oblique 8x10	1. 15° cephalad
Toe	1. AP 2. Lateral 3. Oblique	single 8x10	*coned down over the toe of interest (and isolate from adjacent toes especially on lateral view)
Calcaneus	1. Lateral 2. Axial [3) Oblique]	as required	[3) Oblique, if interested in “tarsal coalition”]

UPPER EXTREMITY

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Shoulder	1. AP – internal rotation 2. AP – external rotation 3. Trans-scapular Y view or 4. Transaxillary view	10x12 10x12 10x12 10x12	1. scapula parallel to panel detector 4. if ROM permits (at minimum, must get 3)
Clavicle	1. AP 2. AP 20° cephalad	single 10x12	Children three years and under to include both sides.
Scapula	1. AP 2. Lateral	10x12 10x12	
Sternoclavicular Joints	1. Single PA Oblique of each side 2. AP of both SC joints	8x10 8x10	
Acromioclavicular Joints	AP both AC Joints 1. without weights 2. with weights	28x10's	Omit 2. if obvious fracture present
Humerus	1. AP 2. Lateral	as required	
Elbow	1. AP - palm up 2. Lateral - thumb up 3. Internal and External Oblique	as required	
Forearm	1. AP 2. Lateral	as required	

UPPER EXTREMITY (Continued)

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Wrist	1. PA 2. Lateral 3. Internal Oblique *4. PA Scaphoid	10x12 10x12 10x12 8x10	*4. Ulnar deviation - 30° proximal angulation. Do scaphoid view if tender in area of snuffbox or distal radius
Carpal Tunnel	1. PA Wrist 2. Lateral Wrist 3. Internal Oblique Wrist 4. Carpal Tunnel Projection	10x12 10x12 10x12 8x10	
Hand	1. PA 2. Lateral 3. Oblique	as required	2. separate fingers
Finger or Thumb	1. PA 2. Lateral 3. Oblique	single 8x10	Coned down & collimate for finger of interest (but still include the adjacent fingers)

CHEST AND THORAX

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Chest	1. PA 2. Lateral [3) expiratory phase PA]	smallest film practical	2. omit for immigration chest [3) if requisition mentions r/o pneumothorax]
Ribs	1. AP or PA 2. AP or PA Oblique 3. AP Lower 4. Chest PA	14x17 14x17 10x12	1. of affected side 2. of affected side 3. If necessary (i.e., lower ribs of interest) 4. If history of trauma,query rib fracture, if patient experiencing chest pain or shortness of breath. (for possible associated pneumothorax)
Sternum	1. Oblique PA 2. Lateral	10x12 10x12	

ABDOMEN

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Abdomen - KUB (eg. assess constipation/ stool burden, kidney stones)	AP supine	14x17	1. include separate view of pelvis if necessary
Abdomen – Acute Abdomen series (eg. acute pain, r/o bowel obstruction, etc)	1. AP supine 2. AP upright 3. PA chest	14x17 14x17 14x17	1. include entire abdomen 2. to include diaphragm - omit if patient too ill
Abdomen - IUD	AP supine	14x17	If IUD not seen, ensure you have covered from the level of the diaphragms to pubic symphysis, 2 views if necessary

SKELETAL SURVEYS

EXAMINATION	PROJECTION	CR CASSETTE SIZE	COMMENTS
Bone Age	Single PA of left hand and wrist	as required	
Skeletal Survey for Suspected Child Abuse/Non-accidental trauma*	1. AP or PA Skull 2. Lateral Skull 3. AP or PA Chest 4. Pelvis 5. Lateral Cervical Spine 6. Lateral Thoracic & Lumbar spine 7. AP both Upper Extremities, incl hands 8. AP both Lower Extremities, incl feet	as required	3. include shoulder and clavicle The number of exposures should be dependent on the child's size. *always **stat**, and call radiologist after obtaining images
Arthritis/ Rheumatoid Skeletal Survey	1. AP Cervical Spine 2. Lateral Cervical Spine 3. Lateral Thoracic spine 4. Lateral Lumbar spine 5. AP Pelvis 6. AP Both Hands & Wrists 7. Lateral Both Hands & Wrists 8. DP Both Feet 9. Lateral Both Feet & Ankles 10. AP Both Ankles 11. AP Both Knees 12. Lateral Both Knees	as required	5. include both hips 8. DP-dorsi-plantar
Metastatic Lesion/ Myeloma Skeletal Survey	1. AP or PA Skull 2. Lateral Skull 3. AP Cervical Spine 4. Lateral Cervical Spine 5. Lateral Thoracic Spine 6. AP Lumbar Spine 7. Lateral Lumbar Spine 8. PA Chest 9. AP Pelvis 10. AP of both Humerii 11. AP of both femora	10x12 10x12 10x12 10x12 14x17 14x17 14x17 14x17 14x17 10x12 10x12	Omit any area that has been recently imaged on radiography on TRUE NORTH IMAGING PACS.

QUALITY ASSURANCE
IN
RADIOGRAPHY

Reviewed July 2024
Reviewed June 2023
Reviewed April 2022
Reviewed March 2021
Reviewed Dec.2020
Revised Sept. 2019
Reviewed April 2019
Revised November 2017
Reviewed March 2013
Reviewed July 2008
Revised January 2007
Revised Aug 2004
Reviewed January 1999
Reviewed May 2000
Revised April 2001
Reviewed March 2002
Reviewed December 2003

QUALITY ASSURANCE - RADIOGRAPHY

THE QUALITY ASSURANCE PROGRAM

This program has been developed in order to ensure that we are meeting our commitment to provide excellence in the delivery of imaging services to our patients and referring physicians.

Each aspect of the program has been developed to comply with both provincial and federal government standards as outlined in the Healing Arts Radiation Protection Act. (HARP), the Radiation Emitting Devices Act (RED), and the Independent Health Facility Act (Bill 147) and is closely monitored by clinic supervisory staff. The program's focus includes not only standards and guidelines for the daily testing of equipment but also a comprehensive quality assurance component to ensure the consistent achievement of quality examinations.

Our technologists operate within controls and monitoring systems which meet, and in some instances, surpass government guidelines, and are firmly committed to the ALARA principle which states that a radiological facility must reduce radiation levels to As Low As Reasonably Achievable.

HARP Compliance Testing

This test is a legislated requirement and must be completed every 6 months. In addition, retesting occurs following relocation or any major repair to X-ray units. The program includes several tests to evaluate the safety and consistency of all diagnostic X-ray equipment and testing is completed by specialists in the equipment field.

Ancillary Equipment Testing

All protective devices, such as gloves and aprons, provided for the safety of the staff, are tested for defects on a regular basis.

Records of these tests are kept on site and copies are forwarded to the Radiation Protection Officer for approval. (see attached “Protective Devices Inspection Report”. Please ensure that a visual inspection of each device is also performed checking for defects in the belts, trim, etc and ensure you record this on your report). He/she is also responsible for monitoring any corrective actions which are required should problems occur with equipment or testing results.

Our Quality Assurance Program meets and, in some instances, surpasses provincial and federal guidelines in order to maximize the quality of the diagnostic imaging we are providing for our facility.

REGULATIONS

HARP Act:

The Healing Arts Radiation Protection Act was first declared in 1980. It was designed to regulate the use of ionizing radiation in Ontario. It defines who may prescribe and perform examinations; how machines should perform; and how this is to be assured.

HARP Guidelines:

This is an interpretation of the HARP Act which defines somewhat more clearly the requirement of the act.

Safety Code 20-A:
This is a federal publication which is of broader scope than the HARP Act. It includes installation requirements, machine specifications and recommendations of how X-ray procedures should be carried out.
IHFA:
This act regulates Independent Health Facilities in Ontario. It focuses on the overall function of a facility including office and imaging procedures and the employees and policies regarding the employees.

RHPA:
The Regulated Health Professions Act defines and regulates various medical professions. The College of Medical Radiation Technologists is the governing body for Medical Radiation Technologists and replaces the BRT.

RED Act (Radiation Emitting Devices):
This mainly outlines the manufacture of imaging equipment.

QUALIFIED PERSONNEL
The owner of an X-ray Facility is responsible for the Radiation Safety of that facility. However, the Owner will usually delegate this responsibility to a Staff person or persons.

a. *Registered Technologist*:

This person will be the responsible user of the equipment and will be a fully qualified Registered Technologist, in good standing with the College of Medical Radiation Technologists. This person is to have on site a record of their current CMRITO card. It is the responsibility of the technologist to maintain their status and report any change to the area supervisor.

b. *Radiation Protection Officer (RPO)*:

Each X-ray Facility is required to have a legally qualified Medical Practitioner named as the Radiation Protection Officer for that facility. On site there must be a letter stating that the named Physician will be responsible for Radiation Safety, and that he/she accepts the responsibilities as detailed in the HARP Act Regulation Section 7. The phone number must be with the letter (see following page for Sample).

c. *Duties of Technical Staff to the RPO*:

The technologist on site should send monthly status reports to the area supervisor and the RPO to keep them informed and updated on equipment performance, Quality Assurance findings, etc.

***Special Circumstances*:**
If, at any time, there is an over-exposure to a patient, the technologist will report to the RPO immediately, who in turn will report such an occurrence to the Director of X Ray Safety (Refer to Section 9 of this manual for explanation of "over-exposure", and steps to follow).

SAMPLE
RPO - LETTER

I,_____being a legally qualified medical Practitioner, CPSO license registration #_____hereby declare that I shall be the Radiation Protection Officer for the facility known as_____. I accept full responsibility for Radiation Safety, as detailed in the HARP Act and in Section 7 of Regulation 45/84. My telephone number is _____. Attached are photocopies of my Fellowship/Certification from the Royal College of Physicians and Surgeons of Canada and a letter of good standing from the College of Physicians and Surgeons of Ontario.

_____ _____

Signed Dated

EQUIPMENT

1. *HARP Testing and Maintenance*

The equipment must be properly maintained at all times, so that the operator can be sure that the scales and meters are accurate. To ensure that this is done, the Ministry requires that each location set up a Quality Assurance Program (HARP Testing). This must be carried out every six months by a qualified person, usually an employee of an X-ray Service Company. HARP testing must also be done following the servicing of equipment. A record of all findings and follow-up maintenance must be kept on site for a period of at least six years as stated by Ontario Regulation of HARP Act 45-84 Section 7 (7) - Page 22.

2. *Usage of Equipment*
   a. Established techniques, those found by the Ministry to be well below legal limits, will be used to ensure entrance exposures are below legal limits (Table 6 - pg. 31 - HARP Act).
   b. The number of radiographic views should not exceed those prescribed by Protocol/Procedure Manuals.
   c. Repeat exposures should be kept to a minimum. As long as the radiograph demonstrates the required information, the technologist is then able to work on improving the quality the next time. A record of repeat exposures is to be kept.

3. *Radiographic Procedures Protocol*

A description of the clinic's routine and special views for all radiographic procedures along with a chart of suggested exposure techniques for different patient sizes in cm, etc., is to be found in each X-ray room control area.

4. *X-Ray Tube Warm Up Protocol- Start of every day, prior to doing patients*
   a. Follow the manufacturer's tube warm up protocols (if any).
   b. Take a test exposure of an object (i.e.-Left or Right Marker) – tape your marker to the center crosshairs, expose using either hand technique if non grid or knee technique if grid. Expose the entire 14 x 17 area. Review the image to ensure that an exposure took place and check gray scales.
   c. Send your image to PACS. Warm up images must be kept for a minimum of 6 years.

5. *Exposure Index Test Log*

This test must be conducted on a monthly basis to ensure our exposure index is within an acceptable range. Every unit has an acceptable exposure index, the exposures of the test cases must fall between this range. (See attached Exposure Index Test Log) Use a random case # for each of the following types of exams 1) Chest X-ray, 2) Lumbar spine, 3) Extremity X-ray.

Exposure Index Test Log
(Monthly)

Clinic Name: _____

Unit Exposure Index: _____

DATE:	CASE #	EXPOSURE INDEX	TECH INITIALS
	Chest: _____ **L-Spine: _____** **Extremity: _____**	**_____** **_____** **_____**	
	Chest: _____ **L-Spine: _____** **Extremity: _____**	**_____** **_____** **_____**	
	Chest: _____ **L-Spine: _____** **Extremity: _____**	**_____** **_____** **_____**	
	Chest: _____ **L-Spine: _____** **Extremity: _____**	**_____** **_____** **_____**	

General X-Ray Daily Log Sheet and Repeat/Reject Analysis:

It is TNI protocol that we keep a log of all patients done and a record of any additional or repeat images taken.

This is to be recorded on the GENERAL X-RAY DAILY LOG SHEET which includes the date, the exam number, the number of cases, the initial number of exposures, the number of additional exposures with reason, the total number of exposures and the technologists initials.

The reasons for additional exposures will fall under 4 categories:
A= Positioning, Patient motion, Double exposure
B= Underexposure/Overexposure
C= Static, Fog, Mechanical processing & handling, Artifacts, Miscellaneous
D= Phantom, QC

Each x-ray technologist is required to complete their own Daily Log for each month.

Monthly, these log sheet totals will be used to calculate the General X-Ray Repeat Reject Analysis for each technologist and an overall clinic monthly repeat rate. This monthly repeat analysis is recorded on the GENERAL X-RAY REPEAT/REJECT ANALYSIS chart then sent to the X-Ray Lead. A repeat rate of 4% or higher will be investigated by the x-ray lead then discussed with your direct supervisor. If corrective action is required a plan of action will be developed and discussed with each individual.

GENERAL X-RAY DAILY LOG SHEET

DATE	EXAM #	# OF CASES	INITIAL # OF EXPOSURES	REASON FOR ADDITIONAL EXPOSURES				TOTAL # OF EXPOSURES	TECH INITIALS
				A	B	C	D		
Page Total									
Total to Date									

A = Positioning, Patient Motion, Double Exposure

B = Underexposure, Overexposure

C = Static, Fog, Mechanical, Processing & Handling artifacts, Misc.

D = Phantom, QA

GENERAL X-RAY REPEAT/REJECT ANALYSIS

Month:_____ Clinic:_____

Name	Initial exposure	A		B		C		TOTAL		Tech Initials
		#	%	#	%	#	%	#	%	
TOTALS:										
OVERALL REPEAT RATE:										

A = positioning, patient motion, double exposure

B = underexposure, overexposure

C = static, processing/handling artifacts, mechanical, fog, misc.

D = QA, Phantoms, films

TOTAL # QA FILMS: _____

X-RAY ROOMS

1. *Warning Signs*

The entrance doors of all X-ray rooms and any areas accessible by the public and not controlled by the technologist shall have warning signs displayed to alert people to the presence of X-ray equipment (refer to code 20A). Warning signs to alert pregnant females are essential.

2. *Entrance Doors*

The entrance doors to an X-ray room, including patient cubicles (where applicable) and preparation room doors, should be kept closed while a patient is in the room. All X-ray room doors, where accessible to the public, are to be equipped with self-closing devices, and shall be closed during X-ray exposure.

3. *The Control Area*

   a. Outside the X-ray room, the control switch of the radiographic machine shall be located so that the operator must remain in the protected area when making an exposure. While remaining in the control area, the technologist must have a clear view of the patient and be able to communicate with him/her.

   b. The Control Areas are to be free of objects that significantly reduce the protected areas available to the operator

4. *Usage of X-ray Room*

An X-ray room is not to be used for more than one radiological investigation simultaneously.

5. *Essential Persons*

Only those persons whose presence is essential shall be present in the X-ray room when an exposure is carried out.

PREGNANT WOMEN

1. Patients who are pregnant, or suspect that they may be, should not be X-rayed, especially during the first four months.
   a. Although, as stated in Section 3A of this manual warning signs are displayed for all potentially pregnant women to see, a technologist should always ask a woman of childbearing age if there is any chance that she could be pregnant. The 10-day rule must be followed.

   b. The holding of patients by a pregnant woman is absolutely forbidden.

   c. Before an X-ray examination of a pregnant woman is undertaken the technologist should

have it approved by the radiologist, and also the referring physician. This shall be noted in writing, on the requisition

If the X-ray examination is still considered essential, exposures should be kept to an absolute minimum and full use made of gonadal protection without interfering with the diagnostic imaging. If the technologist is not irradiating the abdominal area, extra shielding should be used over abdominal and pelvic areas. Also, a well collimated beam must be used (pg. 190 Section 8 (5) of HARP guidelines).

d. Whenever possible, the technologist is encouraged to confer with the imaging physician regarding the use of ultrasound techniques on a pregnant patient, as opposed to radiographic methods.

NOTE: Radiography of pelvic area should be undertaken in the ten-day period following the onset of menstruation, if possible, since the risk of pregnancy is minimal during this period of time ("Ten-day rule").

2. Workers

a. A female operator should be encouraged to notify her employer if she believes herself to be pregnant in order that appropriate steps be taken to ensure that her work duties during the remainder of the pregnancy are compatible with accepted maximum radiation exposure.

b. A dosimeter must be worn at all times by a pregnant technologist. Special limits apply to known pregnant workers and may indicate more frequent return of dosimeters for reading. This service is available through the Radiation Protection Bureau in Ottawa.

c. Fluoroscopy (where applicable) A pregnant worker should not be present in a room where fluoroscopy is being performed. If this absolutely cannot be avoided, the worker must be wrapped in a complete coat-style protective apron, wearing her dosimeter beneath the apron.

HOLDING PATIENTS

a. Registered Technologist

A Registered Technologist should not hold a patient during a radiation exposure if at all possible. If it is essential for the technologist to hold a patient (children, weak or aged persons) protective aprons and gloves must be worn and positioned to avoid the useful beam. The personal dosimeter must be worn under the apron. If extremities are likely to be exposed to significantly high doses, additional extremity monitors should be worn when available.

b. Pregnant Women

At no time, under any condition, is a pregnant staff member, patient, or other pregnant person to hold a patient.

c. Other Staff or Personnel

If other staff, personnel, parents, or escorts are asked to hold a patient, or to assist with a procedure, they must be provided with protective aprons and gloves and be positioned so as to avoid the useful beam.

No one person should regularly perform these duties. Rotor schedules should be employed where feasible. When this cannot be avoided, personnel (nurses, etc.) who routinely participate in radiological procedures, and others likely to receive excessive doses of radiation must also wear personal monitors.

PROTECTIVE DEVICES

a. *Breathing and Movement*

All patients should be instructed by the technologist, before the X-ray is taken, not to move. They should be instructed how to breathe or instructed to cease breathing entirely during an X-ray exposure. This reduces movement, and thus obviates the need for repeat exposures.

b. *Proper Collimation*

Proper Collimation is used to ensure minimum field sizes for all radiographic examinations. Evidence of coning should appear whenever possible (non-compliance with this requirement alone is not cause for repeating the radiograph).

c. *Protective Shielding*

Protective Shielding must be used on all patients. Either a half or full apron must be used when it does not interfere with diagnostic procedure. Gonadal Shielding shall be used with children and adults in reproductive age range, provided there will be no interference with the diagnostic image.

d. *Supportive Devices*

Supportive Devices should be used whenever necessary to prevent movement, and to minimize holding of patients or cassettes by personnel.

e. *Small Children (Pediatric Devices)*

Special devices shall be used for immobilization of small children. Sheets may be used to wrap children securely for skull X-ray. Also, a pig-o-stat must be used for chest X-rays, etc. If a pig-o-stat is not available at your location, refer the patient to one of our nearby locations that does have a pig-o-stat. All possible immobilization and shielding methods are to be used.

PERSONNEL MONITORING

An occupationally exposed worker will be issued a dosimeter or TLD which is to be worn at all times while in the workplace. The same dosimeter is not to be worn by more than one person.

When TLD's are not in use, they shall remain in the workplace and be kept at a central storage point.

A Monitoring Program is ongoing. The TLDs are returned, every three months, to the Radiation Protection Bureau in Ottawa. Here they are read and the results are recorded and returned to the X-ray facility for posting. New TLDs are sent to the facility every three months.

The results are posted in a central location so that all staff are advised of the readings. Acknowledgement in the form of initials must be made by all staff members named. A copy of these results will remain on file at the facility.

If there are any unusual findings or evidence of excessive amounts of radiation being received by one or more operators, steps must be taken to rectify the situation.

For any assistance, the RPB may be reached at the following address:

Health and Welfare
Radiation Protection Bureau
775 Brookfield Road
Ottawa, Ontario
K1A 1C1

Phone number: 1-800-268-0902

TRUE NORTH IMAGING

PROTECTIVE DEVICES INSPECTION REPORT

Semi-annual

Clinic Name: _____ Month/Year:_____

Technique: _____ Glove Technique: _____

Date:	Devise Tested	Visual Inspection	Results (Pass or fail)	Action Taken	Tech Initials

Please ensure comments are listed below, (eg, pinholes or other defects, as well as any visual defects in belts, trim, etc.) be sure to write the date of the test beside your comments.

Comments: _____

_____

_____

_____

_____

_____

MAINTENANCE OF RECORDS

The following records are to be kept up to date, on site, and be readily accessible at any time to the Radiation Protection Officer, or the Ministry of Health personnel.

a. *HARP and Quality Assurance Testing*

The results of HARP and Quality Assurance testing, and any corrective action needed, are to be kept on site for a period of six years. (HARP 7) (7) page 22.

b. *Aprons and Gloves*

These are to be tested either by fluoroscopic or radiographic methods. A hard copy of the findings is to be kept on site. If the aprons or gloves fail, they must be repaired or replaced immediately, and a record kept of this follow-up action is to be filed. (please use chart page 220)

NOTE: All new or repaired equipment must be tested before it is put into service.

c. *Personnel Records*

Each technologist who works at the X-ray Facility is required to have a photocopy of their CMRT Registration on site. This registration is to be renewed each year on his/her birthdate.

d. *Radiation Protection Officer (Letter)*

There must be a letter on site stating that the RPO accepts the responsibility for the radiation safety of that facility.

OVER-EXPOSURE

Definition

An incident or inadvertent exposure which results in a significant additional dose to a patient, pages 62 and 63 - HARP guidelines.

Action

If such an incident occurs, the Charge Technologist must notify the RPO, the area supervisor and the technical coordinator immediately.

The RPO in turn must notify the Director of X-ray Safety of the steps being taken to investigate and rectify any existing problems (Ontario Regulation 45-84 Section 7 (13-14)). This must be received by the Director within 5 days.

This procedure must be posted in all X-ray rooms.

EQUIPMENT BREAKDOWN

X-ray Equipment

An X-ray machine must be HARP tested every six months. At that time, any deficiency will hopefully be found and required maintenance will be followed up.

a. At any other time, the technologist should follow whatever steps are undertaken at that X-ray facility, i.e., minor breakdowns (fuses, light bulbs, etc.) should be looked after by the technologist. Major breakdowns should be looked after by qualified service personnel.
b. The name and phone number of the service company servicing the X-ray equipment should be readily accessible.
c. Any corrective action taken should be documented, as well as the Quality Assurance Testing which may be necessary after any servicing.

FILM STORAGE

Photographic film is photosensitive, but also sensitive to heat, humidity, chemical contamination, mechanical stress, and ambient radiation. Even in the best conditions of storage all film will inevitably deteriorate.

REFERENCE BOOKS

It is advised that Reference Books (e.g., K.C. Clark) be kept on location in order that technologists are able to refer to these for assistance. This may lessen the chances for the necessity of repeat exposures.

A copy of the HARP Act, and IHFA must be kept at each X-ray facility. It is advised that a copy of the Safety Code 20A be obtained and kept at each X-ray facility.

Each X-ray facility must have on site a complete copy of the True North Imaging Policy Manual.

WARNING SIGNS TO BE DISPLAYED

a. Pregnancy

This sign is to be displayed throughout the department for all potentially pregnant women to see. These should be posted in the reception area, change rooms, entrance to X-ray rooms, and X-ray rooms

b. General

This suggested sign, or one of similar content is to be displayed in the area where X-rays are taken

ATTENTION

FEMALE

PATIENTS

If you are pregnant, or suspect you may be pregnant, please advise the receptionist or the technologist before your examination.

When examining patients, please take the following precautions:

1. Keep doors closed.

2. Shield all patients.

3. Use sandbags and sponges for immobilization.

4. Wear a TLD at all times.

5. All persons holding patients during exposure are to wear aprons, gloves, etc.

6. Technologists do not hold patients unless absolutely necessary.

BONE MINERAL DENSITOMETRY PROTOCOLS

Reviewed July 2024
Reviewed June 2023
Reviewed April 2022
Reviewed March 2021
Revised December 2020
Revised February 2019
Revised November 2017
Revised January 2012
Reviewed July 2008
Revised January 2007
Revised August 2004
Revised March 2003

BONE MINERAL DENSITOMETRY

EXAMINATION PROTOCOLS
NO PATIENT IS TO BE EXAMINED WITHOUT A REQUISITION.

Ask the patient if he/she was given a requisition for the examination. The requisition is a "source document" which must accompany the file of all patients examined at the clinic. It must be filled out and signed by the referring doctor and must be filed with the patent's report and kept for a minimum of six years.

If the patient does not have a requisition, then you must call the referring doctor's office and obtain the necessary information and authorization, fill out and sign a new requisition on behalf of the referring doctor.

If there is any doubt as to why the patient has been sent to the clinic, you must contact the RPO/Medical Advisor before proceeding any further.

ALARA, As Low As Reasonably Achievable is a generic stance regarding radiation exposure, the goal of which is the least and lowest exposure possible and/or practicable, vis-à-vis licensed use of radioactive materials, the economics of improving nonradioactive technologies, the benefits to public health and safety, and other socioeconomic considerations.; The free dictionary.com

At TNI, the ALARA principle is applied at ALL examinations,

The potential benefits and risks of each examination is considered.

ALARA is observed when adjusting controls that affect the acoustic output and by considering both the transducer dwell time and overall scanning time for Sound Energy procedures (Diagnostic Ultrasound) as well as radiation and dose reduction for radiation related procedures (X-Ray, Bone Mineral Density &Mammography).

Practicing ALARA requires that users do all of the following for:

X-ray, BMD & Mammography:

Whenever possible, the application of ionizing radiation should be limited to anatomical area of concern using:

Time: Reducing exposure time, directly reduces radiation dose

Distance: increasing the distance between you and radiation source will reduce radiation exposure

Shielding: lead or lead equivalent shielding for X-rays and gamma rays is very effective in reducing radiation exposure. Utilization of specific anatomical shielding when appropriate

Collimation in Xray: whenever possible without omitting relevant anatomy

Should you find a discrepancy in the previous report, please bring it to the attention of the radiologist. The radiologist will issue an addendum report if the previous was done in house. If it is an outside previous, the radiologist will contact the facility that it was performed at and inform them of the discrepancy.

GENERAL INFORMATION

NOTE: GE Lunar X-Ray Bone Densitometers use the technique known as Dual Energy X-Ray Absorptiometry (DXA) to estimate skeletal bone mineral *in vivo.* These instruments quantify bone mineral in the lumbar spine, proximal femur (hip), and other parts of the body.

Cable Check:
A weekly check of all electrical cables must be made and documented.

DESCRIPTION OF A SCAN

The basic philosophy for operator interface and software flow is the same for each type of scan.

The patient is positioned on the scan table, and a scan option selected from the software. The operator uses the laser positioning aid to indicate the start point of the scan. For some types, the operator is also asked to mark the end and baseline points. The start and end points, together with the scan width parameter, define the scan area.

When the operator is satisfied with the scan parameters and region of interest, the software begins collecting scan data. The scanner arm will move back and forth across the patient. The system completes the scan without intervention and signals the end of the scan with an audible beep.

After the scan has completed, the operator can either analyze the scan immediately or save the scan data and analyze it later. When a data analysis is requested, XR software performs the analysis automatically. If the operator does not agree with the analysis, the regions of interest may be redefined manually. When the operator is satisfied with the analysis, the results are viewed and saved. After saving the results, an operator has the option of either printing the report immediately or later.

BEGINNING of SHIFT

1. The densitometer should be left **ON** overnight, as this keeps the tube at a constant temperature. If the table has been turned off for any reason (power outage etc.) the power switch can be located at the foot of the table, towards the floor.
2. Turn on the computer, monitor, printer, and back up drive. The power switch for the

backup drive is located on the back of the drive.
3. Click on Prodigy, and type in the password PRODIGY. Ensure caps lock is on.
4. Double click on the Prodigy icon.
5. Click Directory.

DAILY QUALITY CONTROL PROCEDURE - QA BLOCK

1. Start from the Directory screen. Click QA from the toolbar.
2. Click Start. There will be approximately a 30 second delay before the red cross hairs appear on the table.
3. Position the QA block according to the picture shown on the computer screen. Move the block only, never move the densitometer arm when positioning for QA. This will help keep your clinic's precision. A properly positioned QA block will ensure that the red cross hairs will ***disappear*** into the black cross on the block.
4. Click OK on the computer screen. The procedure will take approximately 6 minutes.
5. The report will automatically print. Ensure **all** statuses state **PASS.** If either of the tests fail, perform the QA a second time. If the QA states fail again, call Aymes Medical immediately. The service representative will let you know if it is safe to continue scanning patients or not depending on which of the tests has failed.
6. Click Close.
7. Return your QA block to the storage area.
8. All QA reports must be saved in a QA binder.

SHUT DOWN PROCEDURES

1. Go to the directory
2. Ensure all of the day's cases are archived. If not, click on "archive" icon on the top of the screen
3. Archive all exams for all patients. Click OK
4. Click OK
5. Click Close
6. Click Exit
7. Click Exit encore. Click OK
8. Click Start, Shut down
9. Turn off monitor, back up drive and printer.
10. Do NOT shut off the Bone Density Machine.

DAILY QUALITY CONTROL PROCEDURE
SPINE PHANTOM

1. From the directory, change the database to SPINE PHANTOM.
2. Double click on Phantom, 35825 from the patient list.

3. Locate the water container provided by GE. If there isn't any water in the container, fill to the *Water Line*. Try to ensure that the water is close to or at room temperature. The water in the container can be reused from day to day. A good habit to form is replacing the water on Fridays. This way, the new water will have time to become room temperature for Monday morning.
4. From the computer screen, choose AP Spine (either from the skeletal image or the listed exams) and click Position.
5. Remove the plastic cover from the water container and locate the "spine phantom" metal block. The grooves of the phantom must face up and the word **Lunar** must be pointing toward the foot of the table.
6. Place the spine phantom in the water.
7. Move the water container **only** when positioning the phantom. Do not move the densitometer arm.
8. The red cross hairs will shine along the bottom of the phantom with one line positioned directly under the word "Lunar" and the other line cutting the phantom in half. Wait for the water to settle before deciding whether the phantom is exactly in the middle. Moving water can distort the red lines.
9. Click Start.
10. Click Copy.
11. Choose a scan to copy, usually the scan from the previous day. Click OK.
12. The scan from the day before will appear beside your current scan. This allows the space between each line (the vertebral height) to be the same as the previous scan. Place your arrow in the middle of the spine and left click and drag the blue box to the proper area, trying to copy the line placement from the day before. Click Results.
13. Click Save. Click Reports. Unclick AP Spine Ancillary. Unclick DICOM, and click Printer instead. Click OK.
14. Remove the metal block from the water ensuring it is completely dry before storing it away. Leaving the block wet could eventually cause rust to form and flake off, causing a change in your results.
15. Plot the BMD on your clinic's Shewhart Chart.
16. From the small toolbar on top of the computer screen, click Measure, and Home Scanner (or click Ctrl H).
17. **Change database back to Patients.**

ENTERING PATIENT'S BIOGRAPHY

1. From the directory, ensure you are in the correct database ("Patients" database).
2. Click Measure and highlight your patient's name. Click Next twice.
3. Your patient information will appear. Ensure proper spelling of name, birthdate, doctor, and accession number.

4. Ensure your patient is not wearing metal of any kind. Have them change into a gown if they are wearing a bra (if underwire). If your patient is wearing jogging pants, ensure the elastic waist band isn't thick. This can cause a soft tissue artifact to appear on the scan, potentially causing changes to the results. Give the patient a choice to change into a gown or sliding their waist band to just below their ASIS. Thin waist bands such as those in yoga pants are acceptable and do not have to be removed. However if they have metal grommets, again they will have to slide the waistband down slightly.
5. Measure your patient's height and weight (average 3 measurements) and record it in the patient information on the computer screen. Click proper gender and ethnicity.
6. For all male patients, they must re-analyze both total hips under the female database and send them to PACS.
7. Click the Secondary tab and ensure that the proper Exam ID number has been recorded. The Exam ID number will be your clinic's accession number such as KV123456 for example.
8. Under Attendant, the tech will record his or her initials. The comments section is where you will record anything of significance that you or other techs may need to know for follow up exams. Examples of this include the block height used, if the patient was unable to rotate their femur properly etc. Click Finish.
9. Ask the patient to sit on the table. BMD technologists should fill out the questionnaire with the patient, especially the fragility fracture history and oral prednisone history (duration and dose).
10. Swing the patient's legs onto the table but ask them to remain seated. It is easier to ensure they are in the middle of the table while they are sitting rather than lying down. Use the white line on the mattress as a guide.
11. Ensure the patient is seated halfway on the table (use the GE symbol on the side of the table as a guide). This will ensure the patient does not bump their head on the arm as they lie back. If your patient is short (5'2" or under) ask them to slide themselves up toward the head of the table. This will ensure the arm glides past the patient's head so that the red cross hairs will not be in their eyes.
12. Help the patient lie back onto the pillow.
13. Go to the end of the table and look at patient positioning to ensure the patient is lying straight.

True North Imaging Osteoporosis Questionnaire

Patient Name: _____ Date:_____

Accession Number:_____ Height: _____cm Weigh: _____kg

1. Have you ever fractured or broken any bones as an adult? Yes No
   _____ Vertebral Fracture _____ Hip Fracture _____ Wrist Fracture
   _____ Humeral Fracture _____ Pelvic Fracture _____ Leg Fracture
   _____ Other _____
   Please indicate at what age the fracture occurred and how it happened (fragility)
   _____
   _____
2. Is there a family history (i.e.. Parent) of an osteoporotic hip fracture? YES NO
3. Do you have anyone in your family with osteoporosis? YES NO
4. Do you smoke? Amount _____ YES NO
5. Do you consume more than 3 servings of alcohol per day? YES NO

_____ Glucocorticoid therapy (ir Prednisone) > 3 months in last year
_____ Malabsorption Syndrome (Celiacs, Crohn's disease, Colitis, Irritable Bowel Syndrome, etc.)
_____ Hyperparathyroidism _____ Hypogonadism _____ Propensity to fall _____ Rheumatoid arthritis
_____ Osteopenia apparent of X-ray film _____ Early menopause (before age 45)

Any other medical conditions? (Cancer, Diabetes, etc.) YES NO
_____

Medications:
Osteoporosis Medications: Current: _____ How Long: _____
Previous:_____Discontinued:_____

Other Current Medications:
_____
_____

6. Have you had a significant weight loss or gain (over 10%) YES NO
7. Have you had a height loss since the previous exam? (how much?) YES NO

Patient History:
8. Have you had a bone density exam before? YES NO
If yes, when, and where?
_____

9. Have you ever had surgery on your lower spine and hips? YES NO
If yes, What type of surgery and why?

_____
_____
_____

10. Have you had a nuclear medicine scan or an x-ray with barium in the past 2 weeks?
YES NO
11. Do you take calcium supplements? YES NO
12. Do you take vitamin D? YES NO
13. Do you take a multivitamin? YES NO
14. Did you take your calcium or a multivitamin today? YES NO

Female Patients Only

Are you pregnant? YES NO
Are you post menopausal? Age____ YES NO
Have you had a hysterectomy? YES NO

Uterus and Ovaries	___	Age	____
Uterus Only	___	Age	____
Ovaries	___	Age	____

Male Patients Only

Any history of low testosterone? YES NO

Tech Comment

_____
_____
_____
_____
_____
_____
_____

INSTRUCTIONS for FILLING OUT TECH NOTES

1. Fill in patient name, accession number, and date of exam.
2. Check off scan mode used. If you had to change the scan mode yourself due to patient body habitus (example: machine chose standard, but patient has protruding belly and thick would be more appropriate) check yes for change in scan mode and make a note beside it saying that you changed it yourself and why. If the scan mode is different from last year due to weight gain or loss, make a note of this as well.
3. Under spine scan, check off which height you used for the sponge. If the patient is a follow up patient, did you use the copy feature, and is the precision within 2%. The precision can be found on the spine analysis screen. Click the trend tab, and look at Change vs. Previous. Ensure the number is within 2% (plus or minus). If not, is there a noticeable reason? Height loss, compression fracture, etc. if for no reason, stand the patient up, reposition the patient and scan again. If the measurements are the same as before, make a note on the tech sheet.
4. Did you have to use the neutralize or painting features? If so, explain briefly.
5. Under femur scan, bone mapping refers to having to move the ROI around the femoral neck. If you move ROI, you are supposed to click "search" to ensure the software is reading the lowest density. However, there are times where this may not be possible. If you do not use the search feature, please explain why.
6. Any extra comments can be made on the bottom of the page.
7. This will be required for all bone density patients. It is part of the OAR bone density Quality Assurance program and is a requirement for accreditation.

OSTEOPOROSIS QUESTIONNAIRE TECH SHEET

Fragility Fracture definition:

Fracture that occurs spontaneously or after minor trauma such as a fall from a standing height or less. Excludes craniofacial, hand, ankle or foot fractures.

1. Glucocorticoid Therapy: Important when oral steroids > 7.5 mg/day for > 3 months in prior 12 months. More than 90 days of oral prednisone > 7.5 mg/day in preceding 365 days – not necessarily consecutive.
2. Malabsorption Syndrome such as celiac disease, Crohn's, lactose intolerance, short bowel syndrome (post-surgical)
3. Propensity to fall : recurrent falls > 2 in past 12 months
4. Hypoganadism: men undergoing androgen – deprivation treatment for prostate CA (lupron, Zoladex, Eulexin, Drogenil Nilandron)
5. Hypogonadism: women undergoing aromatase inhibitor treatment for breast CA (Arimidex, Aromasin, Femara)
6. *Other medical conditions*:

Rheumatoid Arthritis	Endometriosis
Type 1 Diabetes	Acromegaly
Uncontrolled hyperthyroidism	Vitamin D deficiency
Chronic liver disease	Organ transplant recipient
COPD	Hyperparathyroidism
Inflammatory Bowel Disease	Paget's disease
Bulimia or Anorexia	

7. smoking history >1 pack/ day < 5 years or more
8. alcohol consumption >3 drinks / day

True North Imaging BMD Technologist Notes

Patient Name:
Accession #:
Date:

Scan Mode:

Spine:
Standard __ Thick __ Thin __
Change in Scan Mode: Yes __ No __

Femur:
Standard __ Thick __ Thin __
Change in scan mode: Yes __ No __

Spine Scan:

Sponge Height	Short__ Medium __ Tall __	
Copy used	Yes __ No __	N/A __
Precision (2%)	Yes __ No __	N/A __
Neutralize	_____	
Painting	_____	

Femur Scan:

Left:

Copy Used:	Yes __ No __	N/A __
Precision (2%)	Yes __ No __	N/A __
Neutralize Ischium	Yes __ No __	N/A __
Paint used	Yes __ No __	N/A __
Bone Mapping	Yes __ No __	N/A __
Search After	Yes __ No __	N/A __

Right:

Copy Used:	Yes __ No __	N/A __
Precision (2%)	Yes __ No __	N/A __
Neutralize Ischium	Yes __ No __	N/A __
Paint used	_____	
Bone Mapping	_____	
Search After	Yes __ No __	

Comments:_____
_____
_____

RETURN PATIENT INFORMATION

Height Difference (cm)

Previous: _____

Current: _____

Change: _____

Weight Difference (kg)

Previous: _____

Current: _____

Change: _____

Lumbar Spine Area Difference (cm^2)

Previous: _____

Current: _____

Change: _____

Total Hip Difference (cm^2)

Left:

Previous: _____

Current: _____

Change : _____

Right:

Previous: _____

Current: _____

Change : _____

SPINE SCAN ACQUISITION

If patient's first BMD and history of spinal surgery, do a lumbar spine acquisition to see if there is spinal rods present and which levels-patient does not always know what with levels are or may not be accurate, If 2 vertebral bodies are available, BMD for spine can be reported.

Enter the patient's biography and position the patient as required.

1. When a skeletal picture appears, click on the circled area of the spine, or highlight AP Spine under listed exams.
2. Click position, the arm will move from the top of the table to approximately where the patient's spine begins.
3. The images on the computer screen are very accurate with regard to positioning the patient. Using the foam block, ask the patient to lift their legs and position the block so that the legs form a 90 degree angle at the hip.

Move the arm down to center at the middle of L5, or 5cm. below the navel. If you are unable to move the arm to the required position due to the patient's legs, move the block back slightly. If you still are unable to position the laser light, lower the block to the previous position (if you use the tall side, move so that the legs will relax on the medium side. Make a note of this in the comments section.

4. When the laser is in the proper position, click start on the computer.
5. Watch the screen to ensure the proper landmarks appear.
6. If this is your patient's baseline scan and you started too high, too low, or uncentered, click abort. The computer will finish its current sweep and the Smart Scan Warning will appear. Click on the 3rd choice, Reposition this measurement and do not save the aborted measurement. Click OK.
7. If this is your patient's follow up scan, you will notice that your patient's previous scan will appear on the right side of the screen. Try to recreate the previous exam. If the scan has started too high, too low, or uncentered, click Abort, Reposition, and OK.
8. When the image is highlighted by the blue box, drag the box to its required region. Ensure the small blue square on the bottom of the box is centered in the middle of the spine. The lower part of the scan should include at least ½ of L5, the top of the iliac crests, and the spine should be straight. Click Start.
9. The computer will scan until all of the lumbar vertebrae, a portion of T12, and a portion of the true ribs are seen.
10. When the computer stops, click OK and you will be brought to the spine analysis page.
11. Remove the block from the patient's legs; ask them to lay their legs straight on the table.

SPINE SCAN ANALYSIS

1. After the AP Spine scan has been completed, the analysis screen will appear. Aim to see both iliac crests and at least half of L5. The L4-L5 intervertebral space is at the level of the crest, or ½ vertebrae above or ½ vertebrae below the crest. Count the lumbar vertebral body levels from below.
2. The computer will attempt to place the lines through each vertebral space, and often the computer is correct. Do not change the Region of Interest (ROI) unless the analysis shows an obvious need for correction.

If this is your patient's baseline scan at your clinic, and you agree with the line placement, click Save, and then click Close. You will now go onto your patient's next scan (proximal femur or forearm).

3. If this is your patient's baseline scan and you do not agree with the line

If this is your patient's follow up exam, it will be important to ensure accurate line placement from year to year. When the computer attempts its line placement, click Copy. A box will appear asking which scan you want to compare your results to. The most recent exam will automatically be highlighted. Click OK.

Two scans will appear. The image on the left will be your current scan. The image on the right will be the scan that you chose for comparison. The copy feature in the AP Spine allows for exact vertebral height to be maintained. This is important for precision from year to year, especially if a different technologist has performed the follow up exam.
The blue box surrounding the spine can be adjusted. Click and drag the box to its proper region. If the patient's vertebral height has been maintained, click Results, Save, and Close. If the vertebral height has not been maintained, adjustments must be made to the ROI's.

4. Sometimes it is necessary to adjust the contrast temporarily in order to get a clearer image of the individual vertebrae. If this is the case, click Imaging. The image tools window will appear which shows a bone profile. To adjust the contrast, click and drag the contrast scroll bar left or right and select ok. To adjust the brightness, click and drag the brightness scroll bar left or right and click ok.
5. If it is necessary to adjust the ROI's, then click on the ROI icon from the toolbar. There are five main tools that can be used and they are located on the left side of the screen in a vertical line. If T12 has been labeled, highlight the line going between T11 and T12, and click **Delete ROI**. The **Move ROI** icon will automatically be in use when you open the ROI screen. Click and drag the line in question up or down to its appropriate area. If a disc space is angled, the vertebral line can be angled as well. Select **Rotate ROI** and click on only one side of the line in question. Holding down the left button on the mouse pad, move the line so the angle matches the angle of the disc space. If you wish to rotate the line a small amount, a second choice is available. Holding down the **CTRL** button on the keyboard, using the arrow keys will provide smaller movements of the vertebral line.

Sometimes, the computer will only analyze the spine to show three lumbar vertebrae. Here we must add another line to show the fourth vertebra. Click on **Add ROI,** and the extra line will appear below whichever line was initially highlighted. If the computer mislabels the vertebrae, click **Label ROI**, and choose the appropriate label. This step should be done last as lines will probably have to be added prior to re-labelling.
Never exclude an ROI unless specifically requested from your radiologist. When you are finished adjusting your ROI's, click Imaging again and ensure that the contrast is reset to its original outcome. To exit the ROI screen, click Results.

6. If the software has made an obvious error in the Point Typing, you are able to "paint" in the area under the "Points" icon. Move the cursor over the area in question. Change the point typing only if the area in question is larger than the default cursor size of "7". If the area is significant, the best option would be to re scan the patient using a different mode. If the patient was initially scanned under Standard, re-scan using Thin mode. If edge failures are significant, re-scan using a different mode.

If you choose to alternate the point typing, enlarge the graph using zoom (located on the left side of the screen), and shrink the cursor size down to "1" using the scroll bar on the right side of the screen. This will enable you to have more control when adjusting the area in question. Choose whether the area is bone or neutral, colour in the area, and click Results. Examples of obvious errors are incorrect edge painting, or if the software includes osteophytes in its results.

7. If the patient has **Internal Artifacts** that do <u>not</u> overlie the spine, paint them using the "Artifact" feature and make a note on your bag label for your radiologist. An example of internal artifacts would be gallbladder clips.

If the patient has internal artifacts that do overlie the spine, analyze the spine as normal, and do not use the artifact feature. You must, however, scan a third site on your patient. Your radiologist may be able to use a portion of the spine, and it is always better to give your radiologist more information than not enough.

8. When you are satisfied with your image, click Save and Close.
9. If you are planning to scan another site, do not send or print reports until all of your scans have been acquired and analyzed.

<u>HOW TO EXCLUDE AN ROI</u>
If a reporting radiologist asks to exclude an ROI:
1. Open analysis screen of Spine scan.
2. Click ROI
3. On the left side of the screen, the button with the red circle and red line going through it is the EXCLUDE ROI button. Click this button.
4. Choose which ROI you wish to exclude
5. Click results

FEMUR SCAN ACQUISITION

1. From the directory, click measure; enter the patient's biography, and position the patient as required.
2. When the skeletal picture appears, click on the circled area of the left of the hip or dual femur. If the patient has a left hip replacement, choose the right hip only. If you choose dual femur, the machine will automatically begin with the left side. For other contra-indications of the left hip, please see troubleshooting.
3. Click position; the arm on the densitometer will move into place.
4. Remove the hip immobilization device from your shelf and inform the patient that the plastic device will help ensure that their hip will be in the proper position for the scan.
5. Ask the patient to separate their feet and lay the immobilization device between them. Ensure the Velcro straps are attached to the side closest to you.
6. Rotate the patient's hip/femur internally. A good visual indicator of proper rotation is when the patient's patella has been abducted medially. When the hip has been internally rotated, lay the medial side of the patient's foot against the positioner and secure it in place with the Velcro strap.
7. Slide the patient's left or right to ensure that the leg is straight.
8. Using the buttons on the arm, move the densitometer so that the red cross hairs highlight approximately 2-3 inches inferior to the hip joint.
9. Click Start.
10. There must be 2-3 swipes of soft tissue prior to seeing the pubic symphysis. The femur must be straight, and the lesser trochanter must be rotated enough so it has "disappeared" or barely visualized. If this is your patient's follow up scan, the previous scan will appear on the right side of the screen. Try to keep scans consistent by attempting to duplicate the previous scan. Baseline scans will not have a previous image appearing to the right of the current image.
11. If either of the required criteria are not visualized properly, click abort, reposition, and ok. Reposition the patient if necessary, and reposition the blue box surrounding the image on the screen. For a properly positioned blue box, the bottom middle square should lie just medial of the femur, while the square located on the vertical side of the box should be at the same level as the femoral neck. When the box is in place, click start.
12. When the scan is finished, a box will pop up asking if you would like to save the scan or resume. If you selected just a single hip (left or right) click save, and ok. The hip analysis screen will appear. If you clicked on dual femur, click save, and the machine will automatically set up for the right side. Straighten the patient's right leg and move the red cross hairs horizontally across the patient to the right leg. The machine will automatically set up for proper vertical alignment.
13. If you clicked on the single hip and the second hip is required, click measure, and follow instructions 2-12. When you are finished scanning the patient's hips, unstrap the patient's feet, and replace the positioner on the shelf. Should you require a forearm as well, follow the instructions under Forearm Acquisition. A forearm scan can be done while the patient is lying supine on the table. If you have completed your exam, click Measure on the smaller toolbar, and click Home Scanner or Ctrl + H.

HIP (Femoral Neck) ANALYSIS

1. When the hip scan has been completed, the analysis screen will appear.
2. The computer will attempt to highlight the femoral neck with a blue box. Often the computer is correct, do not change the ROI's or Point Typing unless the analysis shows an obvious need for correction.
3. If this is your patient's baseline scan at your clinic, and you agree with the line placement, click save and then click close. If this is your patient's baseline scan at your clinic, and you do not agree with the line placement or edge detection see step 5.

If this is your patient's follow up scan, it will be important to ensure accurate line placement from year to year. When the computer attempts its line placement, click copy. A box will appear asking which scan you want to compare your current image to. The most recent previous will be highlighted automatically. Click OK.

4. Two images will appear. The image on the left side of the screen will be your current scan. The image on the right side of the screen will be the scan you choose for comparison. The copy feature for the hip allows for the exact region of intervals to be highlighted so that the area of the femoral neck remains constant from year to year. You can still move the blue box if necessary, however it is very important to be accurate from year to year. Try to duplicate last year's scan.
5. If you need to adjust the contrast in order to position your blue box properly, please see step 4 in the AP Spine Analysis.
6. If it is necessary to adjust the region of interest, then click on the ROI icon on the toolbar. A rectangle surrounding the femoral neck will be highlighted. Click and drag the box to the area that you believe to be correct. Ensure the box is not cutting into the greater trochanter or cutting into the femoral head (the box laying on top of the trochanter is fine). Click Search. When you click Search, the computer will locate the region of the lowest BMD and most narrow area of the neck. You should never have to rotate the box or adjust the length of the box; only under **extreme** circumstances should these be adjusted. When you are satisfied with your ROI positioning, select Results, and save.
7. If the software has made an obvious error in point typing, click Points. If edge detection has failed, close your exam, and rescan your patient under a lesser mode. For example, if the computer chose standard as the scan mode, rescan the patient under thin. This should fix your edge detection error. When you click Points, the hip will automatically appear in green. This means that the computer is reading the highlighted area as bone. Under Brush Type, click Neutral. The computer will outline the bone in green, and the computer reads this area as neither bone or soft tissue. To highlight an area as neutral (or bone etc.), lessen the brush size to 1. Zoom your area using the zoom bar on the left side of the screen. Using the mouse, click and drag the cursor to highlight the area of the image that you want to neutralize.

The neck ROI should be positioned as follow:

1. The neck ROI includes no part of the greater trochanter
2. The neck ROI includes soft tissue on either side of the neck
3. The neck ROI is perpendicular to the femoral neck
4. The neck ROI contains little or no ischium. If the ischium is included in the neck ROI, the program automatically assigns the bone within the ischium as neutral
5. Click results
6. Click Save.
7. If the T-score is less than -3.0, rescan the hip under a lesser mode, and make a comment regarding this under the comments section of the patient biography.
8. Above the graph is a tab called FRAX (Fracture Risk Assessment Tool). Click on this tab, and if your patient has answered yes to any of the questions listed, click on the appropriate box. Click Calculate and Save.

FOREARM SCAN ACQUISITION

1. Add forearm to every patient with history of hyperparathyroidism
2. Ensure patient biography entry is correct. Update or edit, as necessary.
3. From the skeletal image, click on the forearm. Choose the patient's non-dominant side.
4. If the patient was lying on the table for the AP Spine or hip scans, the forearm can be scanned while the patient is lying supine on the table as well.

To scan a forearm of a patient lying supine on the table:

1. Once the non-dominant arm is determined, lay the forearm positioner under the patient's forearm.
2. The Lunar Logo should be located near the patient's fingers.
3. There are four `holes` in the positioner for the Velcro straps. Ensure the white line from the table pad can be seen through these holes. This ensures proper positioning.
4. The arm is placed on the positioning board with the palm down and the hand near the Lunar label. Ask the patient to make a loose fist.
5. The red line shows the center of the measurement area. Center the patient's forearm along this line.
6. The blue line shows the starting point of the measurement. Position the patient's forearm so the distal end of the ulna is at this line. Position the laser light at this line when you start your measurement.
7. Attach the Velcro straps over the fist and forearm immediately below the elbow. Ensure these straps are outside the measurement region as they could alter the reading.
8. Make sure the patient’s elbow is as close to 90 degrees as possible (providing the patient is able to position), and that the positioner is straight on the table.
9. Click position.
10. Follow the instructions and diagrams on the screen for proper position of the red cross hairs
11. Click Start

To scan a forearm of a patient sitting on a chair:

To be done if requested by a referring physician, if there are bilateral THA or spine surgery or if given a history of hyperparathyroidism.

1. Choose the non-dominant forearm and click position immediately
2. On the top right side of the screen, click on the box that says `Patient Seated`. A box will appear stating the scanner will move to the new start position.
3. Seat the patient in a chair next to the scan table
4. Use a chair without arms or wheels. Use the same chair for all forearm scans to attain optimal precision.
5. Click Start
6. A properly scanned forearm will show the second row of carpal bones, the radius and ulna centered on the screen, and no rotation in the forearm.
7. Before allowing the patient to leave, measure the length of their forearm, measuring from the ulnar styloid to the elbow. You will compare this number to the estimated number the computer used when you analyze your scan. *If your values are different, go to ROI, select forearm length and change to your measurement.*

SHEWHART CHARTS

We have been using an online version of the Shewhart Chart. It will tell you automatically if one of the rules has been compromised. When downloading this program, do not use the BMD computer.

1. Go to the OAR website
2. On the right side of the website is a list of links. The last link is red and says "BMD Precision"
3. Click "to download the Shewhart Test Tool" (Excel File)
4. You will need to download Open Office if you are unable to open the excel file.

The first page will list the instructions of how to use the program and a description of each section. On the bottom of the page will be listed "input page", "charts", "calculations", "notes" and "introduction"

Input Page

On the top of the page, change the name of the institution to the name of the clinic. Type the scanner model (Lunar Prodigy), and type in the serial number of both the Prodigy and the spine phantom used each morning.

A list of dates are shown. Change the dates to begin with the first day of patient exams. Don't forget that Saturday and Sunday are not included as normal patient days. Only type the days that you scan your QC phantom. Under Reading, type in the BMD from the print out of the spine phantom. The words pass or fail will appear automatically.

Charts

The charts will appear automatically, and they will coincide with the numbers typed in the input page. They will only show if the number is within the 1.5% allowed. If the number reads 2% or more, please refer to your standard for protocol.

Calculations - DO NOT ALTER THIS PAGE.

Notes - Type any notes you wish into this page.

Save the Shewhart test tool onto your computer, NOT the BMD computer. Anything saved onto the BMD computer will void the warranty provided by Aymes Medical and GE Healthcare.

Shewhart Chart

It is necessary to establish a baseline value and control limit for phantom measurement.

1. First you must create a new database named “Spine Phantom” in your Prodigy directory.
2. To do this, in your directory, click “new database”.
3. Change the name to “spine phantom” and check the “allow archive” and “allow backup” tabs.
4. The file that was created by the lunar tech during initial setup [Phantom, (5 digit number), Spine (5 digit number)] must be moved from the Patient database and find the spine phantom file. Highlight the file.
5. On the lower half of the screen, the information will appear.
6. Choose “exam to another patient” and then click “Change Database”.
7. If there isn’t a triangle beside “move”, go straight to “Change Database”.
8. Highlight “Spine Phantom” and click “OK”.
9. Do not try to overlap these exams to try and create a file.
10. The newest one will automatically replace the old one, and the information will be lost.
11. Follow “spine phantom” steps from the Daily Quality Control Procedure in your BMD Standards.

Things To Know:

- New Shewhart Charts must be made every time a Lunar Technician comes in to either maintain the machine (PM) or fix the machine for problems.
- 10 scans must be done prior to the technician arriving (as long as the machine is in working order), and again once the technician is finished.
- Record your new numbers on a new chart and these numbers will now be your new averages.
- A Shewhart Chart can indicate hardware faults, random events, and changes in the underlying BMD measurement.
- At the end of each month, please fax a copy of your Shewhart Chart to KVI.

TRUE NORTH IMAGING
CONSENT FOR BONE MINERAL DENSITY PRECISION ASSESSMENT

To find out if there has been a change in your bone density, a recent bone density test is compared with a previous test. For an accurate comparison, we must know when a change is greater than the normal day to day fluctuation in the measurement itself. This is done by doing mathematical calculations on repeat bone density measurements of the same person made on the same day. This is called a "precision assessment".

You have been asked to participate in a precision assessment. You will have your bone density measured two times at the spine and hip. After the first scan, you will need to get off the table and then back on for the additional scans.

The x-ray exposure involved in this is exceedingly small; typically the same as the normal radiation from the sun all of us are exposed to on a daily basis.

Participation is up to you. If you do not wish to participate, it will have no effect on your future treatment. Please ask the BMD Technologist if you have any questions or if you do not understand why you have been asked to participate.

I, _____ consent to:
(Name of patient – please print)

BONE MINERAL DENSITY PRECISION ASSESSMENT

Date: _____

Signature of Patient: _____

Signature of Witness: _____