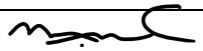
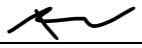
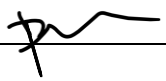
SIGN OFF SHEET

NAME	DATE	SIGNATURE
VICKI GOARD	2022-02-01	VG
YULIA TICKER	2022-02-07	YT
VASILY SHUGAEV	2023-01-09	VS
Kianoush Soudmand	2022-02-02	KS
Vijay Mehta	20220207	VM
Alona Aizenshted	2022-02-07	AA
Sabrina Yang	2023-01-09	SY
Yun Feng	2022-02-07	YF
Tatiana O'Connor	2022-02-07	TO
Larisa Ghenrihson	2023-01-16	LG
GEDI QIAN	2022-02-07	GQ
Bana Raoofi	2022-02-08	BR
Si Han Lin	2022-02-11	SL
Emily Yam	2022-04-26	EY
Alona Aizenstatd	2022-05-20	A.A
Maryam Azizi	2022-05-20	M.A
Marina Bibik	2022-05-20	M.B
Alex Bibik	2022-05-20	A.B
Fatemeh Fasihy	2022-05-20	F.F
2023	**2023**	
Zahra Lotafazar	2023-01-09	ZL
Yun Feng	2023-01-09	YF
Tatiana O'Connor	2023-01-09	TO

Kianoush Soudamnd	2023 - 01 - 09	KS
Gedi Qian	2023-01-10	GQ
Vicki Goard	2023-01-17	VG
SI Han Lin	2023-05-02	SL
Bana Raoofi	2023-05-02	BR
Vasily Shugaev	2023-05-02	VS
Larisa Ghenrihson	2023-05-02	LG
Yulia Ticker	2023-05-03	YT
Fatemeh Fasihy	2023-05-03	FF
Emily Yam	2023-05-03	EY
Mahtab Yaghoubi	2023-08-07	MY
2024	**2024**	**2024**
Vicki Goard	March 9, 2024	
Marlene McCarthy Reviewed and revised	March 12, 2024	
Dr. Peter Zia	March 12, 2024	
Dr. Phil Mok	March 12, 2023	
Reviewed and Revised Vicki Goard	July 9, 2024	
Reviewed and Revised Marlene McCarthy	July 17, 2024	
Dr. Peter Zia	July 19, 2024	
Dr. Phil Mok	July 19, 2024	

X-RAY ASSOCIATES

ULTRASOUND MANUAL

All manuals and protocols are reviewed and revised at least annually by the General Manager with

input from department leads and final approval by the Quality Advisor.
It is the responsibility of all staff to notify the Lead or General Manager of any error or omissions in any manual. Staff must review all manuals and sign off annually. Staff are notified of updates as they occur, either via email, staff memos or in person.
It is expected that all policies and procedures are followed. They have been written to ensure patient and staff safety and support our Goals and Objectives.

Revised and/or Reviewed	**Date**	**Name**
Revised and Reviewed	May 22, 2015,	Marlene McCarthy
Revised and Reviewed	April 2016	Marlene McCarthy
Revised and Reviewed	October 2017	Marlene McCarthy
Revised and Reviewed	January & July 2019	Marlene McCarthy
Revised and Reviewed	January 2020	Marlene McCarthy
Revised and Reviewed	February 2021	Marlene McCarthy
Revised and Reviewed	January 2022	Marlene McCarthy
Revised and Reviewed	January 2023	Marlene McCarthy
Revised and Reviewed	July 2024	Vicki Goard/Marlene McCarthy

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****It is important to always remember that we are a People Centered facility that includes patients families. We must respect the rights and responsibilities of patients and their essential care partners. Upon arrival we must identify and ideally remove all barriers that may limit access to our services.**

Dress Code

This is a Professional Medical Office. It is important that you represent X-Ray Associates appropriately at all times.
The dress attire is a Uniform or **Business Casual with Lab coat**.

Lab coats are provided and must be worn at all times if street clothes are worn. All clothes and lab coats should be clean, have no stains, and pressed. (not wrinkled).

What is Business Casual Attire
For women: A reasonable length skirt, mid-thigh or longer (no mini-skirt). Full-length trousers/slacks (not blue jeans) combined with a top (such as a dress shirt, polo, or sweater set) are considered acceptable. An informal dress with an appropriate skirt mid-thigh length is acceptable. Yoga pants (leggings) are only acceptable if worn with a long top to mid-thigh or skirt to mid-thigh.

For men: A combination of a collared shirt (such as a dress shirt or polo shirt), cotton trousers (such as khakis or blue, green, brown, or black trousers) with a belt, and modest shoes (such as loafers) with socks is acceptable.

Unacceptable clothes for either Gender:
1. Gym clothes 1
2. Hooded tops/Sweatshirts
3. Blue jeans
4. Mini skirts
5. Rumpled or ripped clothing
6. Underwear as outerwear
7. Inappropriately revealing attire
8. Shorts
9. Sweat pants (Wind Pants)
10. No logos or graphics on tops or pants

Unacceptable for Admins: Yoga Pants, Hoodies
Unacceptable Foot Attire ALL staff:
1. Flip flops
2. Boots above the knee

Acceptable Foot Attire for either Gender Technologists:
1. Closed toe is mandatory
2. Running shoes
3. Must be rubber soles, non-slip
4. Heels must not be pointed nor greater than 1”

Diagnostic Medical Sonographers (see also separate Job Descriptions and Training Check Lists in Main P & P)

In Ontario, Diagnostic Medical Sonographers (DMSs) are self-regulated registered professionals with the College of Medical Radiation Technologists of Ontario (CMRITO). The scope of practice of diagnostic medical sonography, as defined under the MRT Act, is the use of sound waves for diagnostic ultrasound for the purpose of diagnostic procedures, the evaluation of images and data relating to the procedures and the assessment of an individual before, during and after the procedures. DMSs must have a current, valid, and active certificate of registration with the CMRITO and should only perform the services and procedures for which they have the necessary knowledge, skills and judgment.

Duties and Responsibilities of DMSs as self-regulated professionals and under the CMRITO's Standards of Practice, DMSs can practice only in those areas in which they have the education and experience, and only perform procedures for which they have the necessary knowledge, skills and judgment to perform effectively, safely and ethically. DMSs must comply with the CMRITO Standards of Practice (as described below) as well as facility policies/protocols.

DMSs are responsible for the day-to-day operation of the facility. These responsibilities include, but are not limited to the following:

1. Adhere to all relevant provincial and federal legislation and guidelines governing the practice of the profession, including: • CMRITO Standards of Practice • CMRITO Code of Ethics • CMRITO
By-laws • CMRITO's sexual abuse prevention program • Personal Health Information Protection Act • Health Care Consent Act

2. Adhere to practice standards as described by • Sonography Canada: most up-to-date National Competency Profile for entry to practice Sonographers • American Institute of Ultrasound in Medicine (AIUM) and Canadian Association of Radiology (CAR) standards

3. Adhere to the facility policies, procedure and protocols including: • Quality Control assessments • Cleaning of all equipment including ancillary equipment (e.g. ultrasound machines, transducers and transducer cords, computer keyboards) • Maintain full records of incidents, unusual occurrences, reactions • Record and report any equipment faults or problems to the appropriate personnel • Use appropriate aseptic techniques and infection control procedures in the course of the diagnostic or therapeutic procedure as per PIDAC/IPAC guidelines

Patient Examination:

• Ensure appropriate delegations (when required), and appropriate knowledge, skills and judgment are in place for all examinations
• Follow facility policy regarding situations where the use
of may be appropriate

• Post appropriate signage to restrict access to the patient exam room
• Ensure the room is prepared for the procedure specified in the order
• Select and set up the equipment and materials needed for the procedure specified in the order Ensure correct patient identification (e.g. confirmation of patient name, date of birth, examination to be performed, and physician/authorized health professional authorization is present)
• Confirm that the order is appropriate based on the patient's clinical history
• Inquire about and record any contraindications (e.g. anaphylaxis) before starting the exam, as well as obtain and record the direction of the physician/authorized health professional to proceed, modify, or halt the exam as per facility policy
• Ensure that the worklist contains the correct patient information (if applicable)
• Obtain informed consent (oral or written as per facility policy) before each examination (after explaining the procedure and answering any questions)
• Ensure pertinent clinical history is available, supplement as necessary and record on the technical impression worksheet
• Instruct the patient to remove only the clothing and items that will interfere with the procedure, providing the patient with a gown or sheet to cover areas where clothing was removed and explaining to the patient when and where the DMS may touch them and why (e.g. during reactive maneuvers, such as augmentation of the patient's calf during a lower extremity venous Doppler ultrasound to rule out DVT)
• Follow the facility examination protocols
• Write a technical impression as per site protocol
• Follow facility protocols when unexpected findings are found that would require immediate attention (e.g. appendicitis, ectopic pregnancy)
• Allergies to latex must be identified and non-latex transducer covers must be utilized - this information must be recorded on the sonographers' technical impression worksheet

Throughout the Examination:

• Assess the patient's condition before, during and after the procedure or course of treatment and make modifications to procedures based on the patient's physical, medical and/or emotional status and needs • Maintain patient comfort, privacy and dignity at all times
• Stop procedure if at any time the patient withdraws consent and record withdrawal of consent and reason as per site protocol
• Use personal protection equipment (masks/gloves etc.) and devices as required for the procedure and as indicated by personal risk assessment
• Ensure that patient examination images and data contain patient name, ID number, date of examination and type of examination and number of images
• Ensure correct annotation on all images as per site protocol
• Ensure the processed image provides diagnostic image quality while minimizing patient exposure to soundwaves (ALARA – As Low As Reasonably Achievable). Take corrective action if necessary and record explanation of sub-optimal imaging
• Ensure that each patient record (including the technical impression worksheet) has the DMS identifier to verify who performed the examination
• Comply with privacy and confidentiality legislation such as the Personal Health Information Protection Act (Ontario)

TOP 10 LIST FOR SONOGRAPHER SAFETY

1) **Move the patient closer** –position the patient close to you so as to avoid reaching and bending.

2) **Optimize the position of the keyboard** – you should position the ultrasound system's keyboard so that the controls are accessible without excessive reach.

3) **Change the patient's position** – when performing bilateral exams, such as bilateral lower extremity venous exams, have the patient reverse his or her position on the exam table. In this way, both sides of the patient can be closer to you during the entire exam.

4) **Raise the exam table** – an exam table that is electronically height adjustable makes it easy to raise the table to a height that is more comfortable for the sonographer. Having the exam table at the appropriate height reduces the need to bend over to reach the patient.

5) **Position the ultrasound monitor directly ahead** – Whether you are working at the computer or on the ultrasound system, the monitor should be directly ahead of you with the height adjusted so that your eyes are even with the top of the monitor. This eliminates neck twist and excessive flexion or extension.

6) **Wrist position** - Excessive flexion and extension of the wrist increases your risk for carpal tunnel injury. It is important that you maintain a neutral hand and wrist position while scanning and while working on the computer. In addition, you should also avoid sideways deviation of your hands.

7) **Reduce arm abduction** – sonographers are encouraged to work the majority of the day with your arms close to their body. Arm abduction greater than 30 degrees for extended periods of time can reduce blood flow to the shoulder muscles and tendons, which increases the your risk for injury.

8) **Choose a comfortable chair** – proper seating with good foot support is important for good lumbar spine support and provides a solid base for your trunk and shoulder girdle.

9) **Self care** – Musculoskeletal health can be maintained through a regular program of stretching and strengthening exercises, proper nutrition, weight control, smoking cessation, and the proper amount of sleep.

10) **Keep moving!** - Dynamic work postures allow muscles to alternately contract and relax, thus pumping in oxygenated blood and allowing waste-laden blood to flow out. Static postures prevent this natural muscle function from occurring and can lead to muscle fatigue and injury.

Be aware of your work postures and implement these suggestions for a healthy workday!

TECHNOLOGIST IMPRESSION:

A technologist cannot give his/ her own interpretation to a patient or referring physician. If the technologist believes the exam to be positive, the exam is discussed with a radiologist.

PERMISSION AND TIMING OF FAMILY/FRIENDS IN EXAM ROOM:

There are times when a family member or friend may need to be in the room. For obstetrical exams, the a significant other is permitted in the room only after the exam is completed. The sonographer will review the baby's anatomy with the couple, give the sex if requested and allow the one screen capture on the phone. If a child is to be imaged, it is best to have only one parent in attendance unless more is required. Patients may require a translator or assistance to perform the exam. At no time should a radiographer hold a patient. (Covid: Facetime with partner)

CHAPERONE FOR TV ULTRASOUNDS & OTHER PATIENT REQUESTS:

Patients may request a chaperone for intimate examinations, i.e. TV ultrasound or some other request related to their examinations/procedures. We must provide options where possible. Ideally, a receptionist (most likely females will be requested) will accompany the patient during the exam. We have signage in the facility. IF we cannot provide a chaperone, patients have the option of rebooking for a new date.
Many languages are spoken at the facility. EVERY attempt must be made to provide patients with an interpreter.

ACCESS TO EXAM ROOMS:

Patient exam room doors must remain open when there is NO patient in the room. This will make you available to staff for assistance. The exception is any electronic doors i.e. Vaughan X-Ray.
If an exam room door is closed, assume a patient is in there! DO NOT enter without knocking and getting verbal permission to enter!

ULTRASOUND FOR FETAL GENDER ONLY:

Exam requests for fetal ultrasound for non-medical reasons (e.g. gender identification) must not be performed. Fetal ultrasound should only be performed for diagnostic purposes on the order of a physician or other authorized health care professional.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE EMERGENCY CASES Radiologist Contact	ISSUING AUTHORITY QUALITY ADVISOR
LAST REVIEW DATE March 31, 2015, Feb 2016, Nov 2020, May 2021, June 2023, July 2024	REFERENCE	EFFECTIVE DATE October 2015

Regular Business Hours: (Monday-Friday 8-4 PM)
Our Radiologists are available for consultation on patient studies during regular business hours in the clinics. If a pathology is suspected, (example fracture, pneumothorax)- US: See list. The technologist can direct the patient to a hospital with a CD of images after consulting with a radiologist.

Technical staff from any modality should NEVER give a verbal or preliminary report to a patient or referring physician. If there is ever any concern, the technologist should get in touch with the radiologist on call.

Finding Radiologist Contact Number

1. CELL PHONE:

Please log on to the Qgenda which should be located on the Bookmarks Bar on all computers
email: xrayassociates@qgenda.com
password: Abcd1234
Daytime, click "Clinics". The Radiologist for Vaughan and Harding (R4) usually takes all STAT cases. Hover over their name and a cell # will appear which you can use to call them to explain your case. Use the Mobile phone located in the front desk area of each clinic. Take the phone to your room to discuss the case and review your images with the radiologist and then return once completed.

For weeknights after 4:00 pm and Saturdays refer to the "Call schedule". Follow the appropriate times for on-call
radiologist and hover over their name as above for their cell #.
If they do not answer immediately, leave a message and be patient for a return call as they may be doing a procedure in the hospital. You may also text them from your personal phone and ask them to return a call to you. Be sure to leave your name and reason for the text.

2. To contact the after-hours Radiologist via hospital locating:

Call Mackenzie Health Hospital Radiologist office: 905-883-1212, ext. 2310 and speak with the on-call radiologist for Mackenzie Health
Any concerns contact Vicki 647-466-1500, Marlene 647-221-7766 or Rosalba 647-981-5040

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE EMERGENCY CASES Radiologist Contact	ISSUING AUTHORITY QUALITY ADVISOR
LAST REVIEW DATE March 31, 2015, Nov 2015, August 2016, April 2016, July 2024	REFERENCE	EFFECTIVE DATE October 2015

Please follow the Guidelines for Emergency Cases:

- ***Positive Appendix***
- ***Ectopic Pregnancy***
- ***Obstructive Stone in Common Bile Duct or Kidney***
- ***Positive Deep Vein Thrombosis, DVT.***
- ***Testicular Torsion***
- ***BPP: anything less than 8 out of 8***

Procedure:

1. Keep the patient and process as a verbal
2. Speak to a Radiologist and confirm the next step for the patient, i.e. send to the ER
3. If after hours, the radiologist on call should be notified as per Emergency protocol

Technologists **MUST write a message in the ENCOUNTER NOTES in Velox, stating the steps given to the patient. i.e. sent to Emergency MH

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE EMERGENCY CASES	ISSUING AUTHORITY QUALITY ADVISOR
LAST REVIEW DATE March 31, 2015, Nov 2015, August 2016, May 13, 2024, July 2024	REFERENCE	EFFECTIVE DATE October 2015

No Fetal Heartbeat

Procedure:

1) If the Radiologist is on site: (Weekdays)

- Keep the patient and process as a STAT.
- Confirm with the radiologist No Fetal Heartbeat.
- Confirm with the radiologist whether they want to speak with the referring physician or not.
- Radiologist/technologist/receptionist to confirm with the referring physician next steps for the patient. e.g. Send to their office, send home

If there is NO answer from the referring physician's office, leave a message stating the patient's name, you have a fetal demise and have directed the patient as per the radiologist's steps, and a STAT report being sent.
Midwives of York Region call the 24-hour pager 1-877 305-3780, leave your name and phone number and they will return your call within 10 minutes.
Family Care Midwives pager number: 1-844-216-5566 and say "I'm calling for patient "name", her midwife is "midwife name" and they will connect you.

- If no response after 15 minutes and multiple attempts, go back to the radiologist and let them know you cannot reach the referring physician.
- The Radiologist will direct you with the next steps

Options:

1) The **radiologist** *will speak* directly with the patient telling them the diagnosis, and send them home. Tell them to contact their referring physician and let them know we will send a report to their office and we will follow up to ensure they got the results.

2) The radiologist *will not speak* to the patient. The **sonographer** will tell them that there are some concerns with the scan and that she can go home and call her referring physician to get the results. We have not been able to reach your referring physician but will send a report and leave a message and will follow up

3) to ensure they got the results.

****Always record the directions given to patients in the encounter notes**

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **EMERGENCY CASES** **Patient sent to ER**	ISSUING AUTHORITY QUALITY ADVISOR
LAST REVIEW DATE July 2024	REFERENCE	EFFECTIVE DATE June 2017

Patients Directed To Emergency: (ultrasound or x-ray)

Send the patient to the closest Emergency with their portal access as directed by the radiologist.

1) If the STAT report is available, insert it into an envelope for them to take.
2) If the report is not available before the patient leaves it will be available in the patient's portal along with the images and within HDIRS for the hospital to retrieve.
3) If a report needs to be expedited, then fax the report to the Emergency Department

.

- Southlake ER Fax #: 905-830-5805
- Mackenzie ER Fax #: 905-883-2138
- Cortellucci ER Fax #: 905-417-3216

****Always record what direction the patient was given in the Encounter notes**

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **BABY PICS**	ISSUING AUTHORITY QUALITY ADVISOR
LAST REVIEW DATE Nov 2020	REFERENCE	EFFECTIVE DATE November 2015

Partners can only come in AFTER the medical exam has been completed.
Covid: Can use a patient's cell phone to Facetime to see images of the baby.

VIDEO recording is NOT allowed.

ACCESS TO IMAGES:

There are many options for patients to have a keepsake of their baby. This is important to them. Cell phone: The patient can take pics from the screen after the exam.

Velox: The patient portal can be accessed for free

CDs: Can be purchased on-site for $10.

Revised June 2024	IPS CODES	
AZIZA	Maryam	—
BIBIK	Alex	—
BIBIK	Marina	67172
FASIHY	Fatemeh	179399
FENG	Yun	—
GHENRIHSON	Larisa	149702
GOARD	Vicki	131823
LAM	Sara	——
LIN	Si Han	——
LOTAFAZAR	Zahar	155075
MEHTA	Vijay	—
MURRILI	Inez	285270
OCONNER	Tatiana	—
QIAN	Gedi	124614
RAOOFI	Bana	BR01
SOUDMAND	Kianoush	——
SHAHHOSSEINI	Fariba	——
SHUGAEV	Vasily	61984
TICKER	Yulia	1125
TOUR SAVADKOUHU	Azita	188560
TRAN	Alex	—
YANG	Sabrina	137650

ALEX BIBIK	GEDI QIAN
Abdomen (F/M) Pelvis (M)	Abdomen (F/M) Pelvis (M)
OBS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Venous Leg Doppler Carotid	Arterial/Venous Arm /Leg Mapping Iliac Doppler
Shoulder	Shoulder Achilles Tendon Plantar Fasciitis
	Greater Trochanter
AZITA TOUR SAVADKOUHU	INEZ MURILLO
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS IPS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Shoulder Achilles Tendon Plantar Fasciitis	Venous Leg Doppler Carotid
	Shoulder
BANA RAOOFI	KIANOUSH SOUDMAND
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS IPS	OBS
Thyroid Scrotal SST	Thyroid Scrotal SST
	Venous Leg Doppler Carotid
EMILY YAM	LARISA GHENRIHSON
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Venous Leg Doppler Carotid	
FARIBA SHAHHOSSEIN	MAHTAB YAGHOUBI
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS	OBS
Thyroid Scrotal SST	Thyroid SST - No Hernia
Arterial/Venous Arm/Leg Doppler Carotid	
Arterial/Venous Arm/Leg Mapping	
Shoulder Achilles Tendon Plantar Fasciitis	
Greater Trochanter	
FATEMEH FASIHY	MARINA BIBIK
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS IPS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Venous Leg Doppler	Venous Leg Doppler Carotid
	Revised July 2, 2024

MARYAM AZIZA	VICKI GOARD
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS	OBS IPS
Thyroid SST	Thyroid Scrotal SST
	Venous Leg Doppler Carotid
SABRINA YANG	VASILY SHUGAEV
Abdomen Pelvis (F/M)	Abdomen (F/M) Pelvis (M)
OBS IPS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Arterial/Venous Arm/Leg Doppler Carotid	Arterial/Venous Arm/Leg Doppler Carotid
Arterial/Venous Arm/Leg Mapping Iliac Doppler	Arterial/Venous Arm/Leg Mapping Iliac Doppler
Shoulder Achilles Tendon Plantar Fasciitis	Shoulder Achilles Tendon Plantar Fasciitis
Greater Trochanter	Greater Trochanter
SARA LAM	VIJAY MEHTA
Abdomen Pelvis (F/M)	Abdomen (F/M) Pelvis (M)
OBS	OBS +16 only
Thyroid Scrotal SST	Thyroid Scrotal SST
Venous Leg Doppler Carotid	Shoulder Achilles Tendon Plantar Fasciitis
	Greater Trochanter
SI HAN LIN	YULIA TICKER
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS	OBS IPS
Thyroid Scrotal SST	Thyroid SST
Venous Leg Doppler Carotid	
TATIANA O'CONNOR	ZAHRA LOTFAZAR
Abdomen Pelvis (F/M)	Abdomen Pelvis (F/M)
OBS	OBS IPS
Thyroid Scrotal SST	Thyroid Scrotal SST
Shoulder	Venous Leg Doppler Carotid
	Shoulder Achilles Tendon Plantar Fasciitis
YUN FENG	
Abdomen Pelvis (F/M)	
OBS	
Thyroid Scrotal SST	
Venous Leg Doppler Carotid	
	Revised July 2, 2024

ULTRASOUND BOOKING TIMES		Revised January 5, 2023	
Abdomen	30 Minutes	J135	
Abdomen + SST	30 Minutes	J135 + J182	
Abdomen + Hernia	45 Minutes	J135 + J182	
Abdomen + Pelvic (M) (M/F<18 yrs)	45 Minutes	J135 + J162	
Abdomen + Thyroid	45 Minutes	J135 + J105	
Abdomen + Pelvic (F)	60 Minutes	J135 + J162 (J138)	
Abdomen + Pelvic +/-Transvaginal + Thyroid	75 Minutes	J135 + J162 + J138 + J105	
Abddomen+Pelvic+Scrotal+Thyroid	75 Minutes	J135 +J162+ J183 + J202B + J105	
Abdomen+Pelvic +Scrotal	60 Minutes	J135 + J162 + J183 + J202B	
Abdomen+Pelvic +/- Tranvaginal +Hernia	60 Minutes	J135 + J162 + J138 + J182	
Renal Ultrasound + Pelvic	30 Minutes	J128 + J162	
Renal Ultrasound + Pelvic + Transvaginal	45 minutes	J128 + J163 + J138	
Abdomen Limited	30 Minutes	J128	
Urgent Appendix (F)	Emerg	J128+J162+J138+J202+J182	
Urgent Appendix (M)	Emerg	J128+J162+J182	
Pelvic (F) +/ - Transvaginal	30 Minutes	J162 + J138	
Pelvic (F) +/- Transvaginal + Thyroid	60 Minutes	J162 + J138 + J105	
Pelvic (F) +/ - Transvaginal + SST	30 Minutes	J162 + J138 + J182	
Pelvic (F) +/ - Transvaginal + Hernia	45 Minutes	J162 + J138 + J182	
**Pelvic (M) (F<18)	30 Minutes	J162	
Pelvic (M) + Thyroid	30 Minutes	J162 + J105	
Pelvic (M) + SST	30 Minutes	J162 + J182	
Pelvic (M) + Hernia	45 Minutes	J162 + J182	
Pelvic (M) +Scrotal	45 Minutes	J162 + J183 + J202B	
Pelvic Limited	15 Minutes	J163	
OBS Pre 16	30 Minutes	J157	
OBS Nuchal Translucency (IPS)	30 Minutes	J168	
OBS HR Pre 16 wks	30 Minutes	J160	
OBS Twins Pre 16 wks	30 Minutes	J160 + J166	
OBS Triplets Pre 16 weeks	60 Minutes	J160 + J1662	
OBS Nuchal Transluceny (IPS) Twins	60 Minutes	J168 + J169	
OBS Post 16 (Anatomy)	60 Minutes	J159	
OBS HR Post 16 wks	45 Minutes	J160	
OBS Twins Post 16 wks	90 Minutes	J160 + J166	
OBS BPP	45 Minutes	J160	
OBS Limited	30 Minutes		
Thyroid/Neck (parotid, submandibular glands)	30 Minutes	J105	
Thyroid/Neck + Carotid	60 minutes	J105 + J201	
Thyroid/Neck + SST	30 Minutes	J105 + J182	
Testical (Scrotal)	30 Minutes	J183 + J202B	
Testical (Scrotal)+ Hernia	30 Minutes	J183 + J202B + J182	

SST - Soft Tissue Palpable Lump x1	15 Minutes	J182	
SST - Soft Tissue Palpable Lump x2	15 Minutes	J182x2	
SST - Soft Tissue Palpable Lump x3	30 minutes	J182x3	
SST - Soft Tissue Palpable Lump x4	30 minutes	J182x4	
SST -Hernia	30 minutes	J182	
Achillies Tendon	15 Minutes	J182 + J193	
Plantar Faciitis	15 Minutes	J182 + J193	
Greater Trochanter (Hip)	15 Minutes	J182 + J193	
MSK Shoulder x1	15 Minutes	J182 + J193	
MSK Shoulder x1 + SST	30 Minutes	J1822 + J193	
MSK Shoulders x2	30 Minutes	J1822 + J1932	
MSK Shoulders x2 + SST	30 Minutes	J1824 + J1932	
Venous Lower Extremity (DVT) x1	15 Minutes	J202	
Venous Lower Extremity (DVT) x2	30 Minutes	J2022	
Venous Lower Extremity (DVT) x1+ SST	15 Minutes	J202 + J182	
Venous Lower Extremity (DVT) x2+ SST	30 Minutes	J2022 + J182	
Venous Upper Extremity x1	15 minutes		
Venous Upper Extremity x2	30 minutes		
Carotid	30 Minutes	J201	
Carotid + SST	30 Minutes	J201 + J182	
Arterial Lower Extremity x1	30 Minutes	Groups (J128, J202 J200, J196)	bilateral unless only has only 1 leg
Arterial Lower Extremities x2	60 Minutes	Groups (J128, J202 J200, J196)	
Arterial Lower Extremity x1 + SST	30 Minutes	Groups (J128, J202 J200, J196) + J182	
Arterial Lower Extremities x2 + SST	60 Minutes	Groups (J128, J202 J200, J196) + J182	
Arterial Upper Extremity x1	30 Minutes		
Arterial Upper Extremity x2	60 Minutes		
Iliac Doppler for Renal Transplant	45 Minutes	Group (J128, J163, J193, J202)	
Bilateral Arm Arterial Doppler - Mapping	60 Minutes		
Bilateral Arm Venous Doppler - Mapping	60 Minutes		
EMERGENCY SPOT	30 Minutes	Revised January 5, 2023	

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Students in Ultrasound**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE Nov 2020, March 2024	REFERENCE	EFFECTIVE DATE November 2017

Training students has been a rewarding program for us as we hope the exceptional students will become employees. We have been chosen because of our excellence as an organization and sonographer expertise!

SELECTION:

X-ray Associates has teamed with 3 colleges for sonographer training. Michener Institute, CNIH, (Canadian National Institute of Health Inc.) and Anderson

Students are approved for training only if we can meet all the criteria:

- What are their specific training requirements (i.e. only OBS)
- Do we have sufficient staffing to accommodate a student
- Do we have at least one specific staff member to perform evaluations
- Can the student travel to more than one clinic, if required

These students are approved for training by the Lead Sonographer and General Manager. There is a contract between X-Ray Associates and the Ultrasound College.

LIABILITY:

Students are insured through their prospective college. A registered sonographer will always be responsible for the patient's exam. There will be a comfort level established before the student is left alone to scan. ALL images and worksheets are to be reviewed by a registered sonographer before the patient leaves. If necessary, the registered sonographer may be required to rescan the patient.

TRAINING:

Staff are responsible for following the training criteria outlined by the prospective college in keeping with the policies, procedures and values of X-ray Associates Inc. Students must complete all health and safety courses before starting. If there are concerns with any student for ANY reason they should be addressed immediately with the Lead Sonographer.

COMMUNICATION:

Regular communication is maintained with the referring college on the student’s progress.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **ALARA Principle**	ISSUING AUTHORITY GENERAL MANAGER
LAST REVIEW DATE	REFERENCE	EFFECTIVE DATE February 12, 2015

ALARA Principle

The potential benefits and risks of each examination should be considered. The ALARA principle (as low as reasonably achievable) principle should be observed when adjusting controls that affect the acoustic output and by considering transducer times

Only exams ordered by a physician or Midwife can be performed. Ultrasound for entertainment is NOT allowed. i.e. OBS

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **PATIENT CARE/CONTACT**	ISSUING AUTHORITY GENERAL MANAGER
LAST REVIEW DATE: Sept 2019, March 2024	REFERENCE	EFFECTIVE DATE March 2016

PREAMBLE: *The term "patient" is derived from the Latin word pati—to suffer. A person becomes a patient/client because he or she seeks medical aid.* Not all patients are suffering, but most are anxious. The anxiety may or may not be recognized by the patient. The patient may be anxious about the exam, the technologist, the equipment, what might be discovered, etc. The technologist must attempt to reduce these anxieties. When a technologist greets the patient, the following is expected:

- Introduce yourself: SMILE Remember they are nervous and need to be reassured.
- Confirm that you have the correct patient, order and referring physician(s): You ***MUST confirm with a checkmark*** BEFORE starting your exam:
    - Confirm the patient's **name.**
    - Ask the patient's **DOB.**
    - Confirm that the **order is correct** and matches the patient history.
    - Confirm that the correct **referring physician(s)** are getting the report.
- *DO NOT have the worklist up when patients are getting off and on the table. Close the exam and then close the Worklist!*
- Explain/confirm the examination before starting the patient's exam. Verify the area/side requested from the requisition. (e.g. your doctor has requested an x-ray of your left hand)
- Patients' privacy is a must, use a towel or paper sheet to cover exposed private areas. Provide a gown (or 2) to patients when necessary.
- Make the patient comfortable: Tell the patient how you are going to move them or how you want them to move.
- When attempting to locate a landmark, let the patient know where and why and that you will be touching them.
- Patient Contact in the sense that any procedure relates to the physical hands-on touching of a patient. Technologists are expected to follow all expectations as per their college in regards to patient contact.
- Whenever possible, a male technologist doing an examination on a female patient may request the assistance of either a relative or if necessary, a clerk. Above all, do not compromise yourself or the patient. (or female with a male patient)
- Confirm all female patients are not pregnant and record in PACS. (radiography)
- Look professional. Your appearance and attitude will bear significantly on how the patient responds.
- Always be cautious of the "at risk" patient and be prepared to respond appropriately
- Be calm and sympathetic. This is manifested in your communication techniques and body language.
- Beware of and be sensitive to "cultural risk" areas and linguistic differences
- Listen to the patient. Give patients a chance to speak. Don't rush them.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Abdominal US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: Feb 2015	REFERENCE CAR Standards for Ultrasound Examination of the Abdomen and Retroperitoneum – Approved March 2002 AIUM 2012 Practice Guidelines	EFFECTIVE DATE July 15, 2009

Abdominal Ultrasound

Preparation:

Nothing to eat or drink for 8 hours prior to your appointment (except to swallow necessary medication.). For children under 3 years, feed as usual.

Indications:

For Abdominal Ultrasound include but not limited to:

- Abdominal flank and/or back pain S & S of jaundice or hematuria
- Palpable abnormalities (EG mass or organomegaly)
- Abnormal laboratory values or other imaging examinations
- Follow up of known abnormalities
- Metastatic disease
- Congenital abnormalities
- Trauma
- Free fluid
- Evaluation of urinary tract infection

Equipment:

Studies should be conducted with a real-time scanner, using sector or curved linear transducers with frequencies between 3.5MHz and 6.0MHz. A large patient may require a 2.25 MHz transducer, and for pediatric patients' higher frequency transducers (5MHz or greater) usually provide optimal images.
Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Information regarding the patient's past and present health status is essential in providing appropriate diagnostic ultrasound information. Must obtain this especially if nothing has been provided from the referring MD.
A complete examination of the abdomen includes an assessment of the liver, gallbladder, biliary tract, pancreas, spleen, kidneys, aorta, inferior vena cava and retroperitoneum. Each slide should be labelled with the orientation of view and the name of the organ.

Pancreas
Transverse views: head, uncinate process, body and tail.
Sagittal views: head with IVC/PV, body and tail with aorta when possible.
These views should be obtained in the supine and if necessary, erect and left lateral decubitus positions.
Evaluate for size, contour, echogenicity and the presence of diffuse/focal disease.
The pancreatic duct may be visualized and its caliber, content and margination should be assessed.
The peripancreatic region should be assessed for adenopathy, fluid collections and vascular abnormalities.

Aorta & IVC
Sagittal views: proximal, mid and distal aorta to bifurcation. Transverse views: proximal, mid and distal to bifurcation
Sagittal view of IVC.
Aortic study should include assessment of vessel size, pulsatility and documentation of thrombus.
AAA screening always measures the largest AP diameter of the aorta and includes bifurcation and iliac vessels.
Aneurysmal dilatation of the aorta should be measured in anteroposterior and transverse dimensions.
IVC should be assessed for location, size, pulsatility and luminal filling defects.
Duplex and colour Doppler may be of value in evaluating luminal flow in the aorta and inferior vena cava.
Assess for lymphadenopathy at the same time.

Adrenals
Longitudinal and transverse views. This should be performed routinely on all newborn abdominal exams.

Kidneys
Long axis views.
Transverse views: upper, mid (hila) and lower poles. Obtain views in the supine and decubitus positions
Document renal size. If less than 16 years of age include a normal range.
Evaluate size, contour, mobility, location, and renal parenchyma (cortex and medulla). Compare echogenicity with liver.
Evaluate renal sinus for focal or diffuse abnormality. Evaluate the renal collecting system for dilation, appearance of the uroepithelium and content. Measure the AP dimension of the renal pelvis from transaxial view, if there is pelvicaliectasis.
If there is dilatation of the collecting system, check the bladder for ureteric jets and other anomalies such as a cystocele in the bladder. Then recheck the dilatation of the collecting system post-void.
Assess the perirenal region for any abnormality. Duplex and colour Doppler may be used in differentiating minor degrees of dilatation of the collecting system from blood vessels.

Spleen
Long axis and transverse views in the supine and/or right lateral decubitus positions.
Document size. If less than 16 years of age include a normal range. Evaluate size, location, contour and hilar orientation
Evaluate parenchyma for echogenicity and focal or diffuse abnormality and compare echogenicity with the adjacent left kidney. Assess left pleural space.

Gallbladder
Long axis and transverse views in both the supine and one other position. Other positions include LT lateral decubitus, and erect. and prone. Document transaxial measurement, if distended (>4cm). Assess gallbladder wall for morphology and thickness.

Evaluate the intraluminal content including the presence of sludge or stones and their mobility.
Always measure the largest stone or polyp, if present. Document the presence/absence of transducer tenderness. Comment on the Murphy's sign, positive or negative

Biliary Tract

Long axis views of the common hepatic duct, Common bile duct and along the dorsum of the pancreatic head.
Document bile duct caliber, **measured in mm.** Evaluate bile duct caliber, wall thickness, and bile duct content.
Need to follow common bile duct throughout the entire length to ampulla to exclude choledocholithiasis for post-cholecystectomy patients with recurrent pain.
Evaluate intrahepatic ducts in the periphery of the liver and in the region of the porta hepatis adjacent to the right and left branches of the portal vein.
Follow dilated intrahepatic ducts centrally to assess for obstructing liver masses.
Duplex and colour Doppler may be used to differentiate hepatic artery and portal vein from bile ducts.

Liver

Liver examination should include long axis, transverse, and subcostal views. Obtain views in the supine and left lateral decubitus positions.
Document size: done in the right midclavicular line. If less than 16 years of age include a normal range.
Evaluate size, shape, contour, and echogenicity. Liver parenchyma should be evaluated for focal and/or diffuse abnormalities. The major hepatic and perihepatic vessels including IVC, hepatic veins, the main portal vein, and if possible, the right and left branches of the portal vein should be imaged. Image the hepatic lobes. (right, left and caudate)
Comment on the echogenicity of the liver parenchyma in relation to the kidney.
Assess for the presence of focal or diffuse abnormality If lesions are found:

a) measure the largest in the left and right lobes (also image without calipers on)
b) measure the smallest lesion found anywhere
c) label lesions on worksheet for follow-up exams and document the location of any lesions using segmental anatomy.

For patients with ascites NYD, Doppler hepatic vessels.
For Doppler interrogation of hepatic vessels, obtain colour and spectral tracings for hepatic artery, right, left and main hepatic veins, main portal vein, right portal vein (ant and post branches) and left portal vein (ascending and descending). Document patency and direction of flow. (Hepatopetal (toward the liver) Hepatofugal (away from the liver) Interrogation of the hepatic artery, superior mesenteric vein and splenic vein should show colour flow and spectral tracing for patency and direction of flow. Assess the right hemidiaphragm and right pleural space.

Retroperitoneum

Assess the abdominal great vessels, the pancreas, kidneys, adrenal glands, regional lymph nodes, retroperitoneal musculature and the potential retroperitoneal spaces long axis and transverse views

Peritoneum

For patients with cancer, specifically colon and ovarian cancer, scan the entire abdomen just below the abdominal wall to assess for omental seeding. Scan just below the echogenic peritoneum (should move up focal zones and will see bowel moving beneath peritoneum).
Assess for intraperitoneal free fluid, and state presence or absence. The bowel may be evaluated for wall thickening, dilation, masses, and other abnormality

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Limited Ab: Renal US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: Feb 2019	REFERENCE CAR Standards for Ultrasound Examination of the Abdomen and Retroperitoneum – Approved March 2002 AIUM 2012 Practice Guidelines	EFFECTIVE DATE February 15, 2008

Renal Ultrasound and Bladder (KUB)

Preparation:

A light breakfast with no dairy. And a full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void. For children under 3 years, feed as usual.

Indications:

For Renal Ultrasound include but not limited to:

- Abdominal flank and/or back pain
- Abnormal laboratory values or other imaging examinations
- Follow up of known abnormalities
- Congenital abnormalities
- Evaluation of urinary tract for infection/stones
- Urinary retention

Equipment:

Studies should be conducted with a real-time scanner, using sector or curved linear transducers with frequencies between 3.5MHz and 5.0MHz. A large patient may require a 2.25 MHz transducer, and for pediatric patients, higher frequency transducers (5MHz or greater) usually provide optimal images.
Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Information regarding the patient's past and present health status is essential in providing appropriate diagnostic ultrasound information. Must obtain this especially if nothing has been provided from the referring MD.

A complete examination of the kidneys includes an assessment of the kidneys, bladder, and retroperitoneum.

Each slide should be labelled with the orientation of view and name of the organ.

Kidneys
Long axis views.

Transverse views: upper, mid (hila) and lower poles. Obtain views in the supine and decubitus positions. Document renal size. If less than 16 years of age include a normal range. Evaluate size, contour, mobility, location, and renal parenchyma (cortex and medulla). Evaluate renal sinus for focal or diffuse abnormality. Evaluate the renal collecting system for dilation, appearance of the uroepithelium and content.

Measure AP dimension of the renal pelvis from a transaxial view, if there is pelvicaliectasis.

Assess the perirenal region for any abnormality.

Duplex and colour Doppler may be used in differentiating minor degrees of dilatation of the collecting system from blood vessels.

Check bladder for ureteric jets and other anomalies such as a cystocele in the bladder. Perform pre and post-void on the bladder. Then recheck if there is dilatation of the collecting system post-void.

Prostate
Sagittal and transverse views of the prostate from the apex the base of the gland. Evaluate for size, echogenicity, symmetry and continuity of margin and document size (prostate volume). Evaluate seminal vesicles for size, shape, position and echogenicity.

Retroperitoneum

Assess the kidneys, adrenal glands, regional lymph nodes, retroperitoneal musculature and the potential retroperitoneal spaces
Long axis and transverse views

Peritoneum

Assess for intraperitoneal free fluid, and state presence or absence.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Female Pelvis US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: January 10, 2017, October 4, 2018, May 2019, March 2024	REFERENCE CAR Standards for Ultrasound Examination of Female Pelvis – Approved March 2002 AIUM 2014 Practice Guideline Polycystic Ovarian Syndrome Clinical Practice Guidelines 2018.Australian National Health & Medical Research council, European Society of Human Reproduction & Embryology and American Society of Reproductive Medicine.	EFFECTIVE DATE July 15, 2009

Female Pelvis

Preparation:

For a pelvic sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void.
For a vaginal sonogram, the urinary bladder is preferably empty.

Indication:

For Female Pelvis includes but is not limited to:

- Pelvic pain/RLQ pain
- Evaluation of pelvic masses
- Query polycystic disease
- Dysmenorrhea (painful menses)
- Amenorrhea
- Abnormal bleeding
- Delayed menses
- Follow up of previous detected abnormality
- Evaluation of infertility
- Query pelvic infection
- Localization of contraceptive device
- Screening for malignancy
- Evaluation of incontinence or pelvic organ prolapse

Equipment:

Studies should be performed with a real-time scanner using sector or curved linear transducers. Studies performed from the anterior abdominal wall can usually use frequencies of 3.5 MHz or higher while scans performed from the vagina should use frequencies of 5 MHz or higher. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Always document LMP and/or any relevant clinical information such as postmenopausal, HRT use, in vitro fertilization or fertility meds.

All relevant structures should be identified and recorded by the abdominal and/or vaginal approach. Each slide should be labelled with the orientation of view and name of the organ.

The vaginal transducer may be introduced by the patient, or sonographer.

It is highly recommended that a woman be present in the examining room during vaginal sonography, either as an examiner or a chaperone Transabdominal and Transvaginal

Check bladder in sagittal and transverse. Perform pre and post-void on the bladder when indicated.

Long axis and transverse views of the uterus and ovaries. Long axis views of the iliac vessels.

Evaluate uterine size, shape and orientation (version).

Evaluate and document uterine length (fundus to the cervix) and AP diameter in its long axis, width is measured from the transaxial or coronal view.

Examine myometrium and cervix. Evaluate for contour changes, echogenicity and masses.

The vagina should be imaged as a landmark for the cervix and lower uterine segment.

Document any abnormalities of the uterus. Specifically for fibroid documentation, if more than 1, document the 3-dominant fibroids including the largest. Measure in 3 dimensions (LxWxH) Label fibroids on images acquired and on the technologist's worksheet. Describe on the worksheet size and location of mass and in which layer of the uterine tissue (submucosal, intramural or subserosal.) Also, if it is in the fundus vs body of the uterus and anterior or posterior.

Examine and document endometrial thickness in the long axis view and evaluate its echogenicity and position. Image with the endometrial stripe along the entire length. Any fluid within the endometrial cavity should be excluded from the measurement.

Use colour Doppler interrogation for clinical situations where retained products of conception are questioned and endometrium is >5mm, or if assessing for a polyp.

If 2 endometrial stripes are seen near the fundus, assess uterine fundal contour (coronal views) to assess if bicornuate or subseptate uterus (especially for infertility).

Evaluate the size, shape, echogenicity and contour of the ovaries.

Document the size of the ovaries (LxWxH) on views obtained in 2 orthogonal planes. Calculate

ovarian volumes for all cases that question ovarian cancer, ovarian torsion and polycystic ovarian disease.

For polycystic ovarian disease include:

- include the age of menarche onset
- a volume
- count the # of follicles and indicate >25, 10-25, or <10.
- description of follicle location i.e. ringing around the edge of the ovary vs dispersed

For evaluation of IUCD placement measure from the distal end of IUCD to the fundal end of the endometrium.

Assess the size and characteristics of adnexal masses and evaluate their relationship with ovaries. This should include Doppler interrogation.

If ovaries cannot be identified, image adnexa to iliac vessels.

Evaluate the cul de sac and posterior to the uterus for the presence of free fluid or masses. If there is more than a small/physiological amount of free fluid in the cul de sac, check Morrison's pouch and flanks.
Always evaluate the bladder wall.

Where clinically indicated (urological), document pre and post-void volumes.

For RLQ pain, an evaluation of the appendix with a 12MHz probe should be used.

Endovaginal

Endovaginal scanning may be necessary for additional diagnostic detail. Proceed with the endovaginal study **following completion** of a transvesical examination when the examination is considered appropriate/necessary. Use the same criteria as the transabdominal examination.

Consent must be obtained, either verbal or written, and documented on the technical worksheet with a TV identifier. If a written consent has been obtained it must be scanned as an added document.

Endovaginal measurements are generally more accurate than trans-pelvic measurements. Use endovaginal measurements, unless better visualized transabdominally.

These are some clinical indications where endovaginal examination is useful and should be performed in all possible cases:
For assessment of endometrium: postmenopausal bleeding, retained products of conception or polyps.
For assessment of infertility: bicornuate or subseptate uterus, hydrosalpinx. For assessment of ovaries: possible/recurrent ovarian cancer, ovarian torsion or polycystic ovarian disease.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Male Pelvic US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015	REFERENCE CAR Practice Guidelines for Performing US examination of the Prostate and Surrounding Structures - Approved April 2013 AIUM 2010 Practice Guidelines	EFFECTIVE DATE July 15, 2009

Male Pelvis

Preparation:

For a pelvic sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment.

Indications:

For Male Pelvis includes but is not limited to:

- Pelvic pain
- Assessment of the prostate gland and seminal vesicles
- Prostatitis
- Infertility
- Hematospermia
- Evaluation of pelvic masses
- Bladder retention

Equipment:

Studies should be performed with a real-time scanner preferably using sector or curved linear transducers. Studies can usually use frequencies of 3.5 MHZ or higher. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Check bladder in sagittal and transverse. Perform pre and post-void on the bladder when indicated.

Sagittal and transverse views of the prostate from the apex to the base of the gland.

Evaluate for size, echogenicity, symmetry and continuity of margin and document size (prostate volume).

Evaluate seminal vesicles for size, shape, position and echogenicity. Where clinically indicated (urological), document pre and post-void volumes.

Evaluate bladder wall.

Long axis views of iliac vessels.

Each slide should be labelled with the orientation of view and name of the organ.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Emergency Appendix US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CAR Standards for Ultrasound Examination of the Abdomen and Retroperitoneum –	EFFECTIVE DATE October 2017

Emergency Limited Appendix Ultrasound

Preparation:

Nothing to eat or drink for 8 hours prior to your appointment (except to swallow necessary medication.). For children under 3 years, feed as usual.

For a pelvic sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void.
For a vaginal sonogram, the urinary bladder is preferably empty.

Indications:

- RLQ/pelvic pain

Equipment:

Studies should be conducted with a real-time scanner using sector or curved linear transducers with frequencies between 3.5MHz and 5.0MHz. A larger patient may require a 2.25 MHz transducer, and for pediatric patients' higher frequency transducers (5MHz or greater) usually provide optimal images. A linear 12 MHz probe should be used to evaluate the bowel in the affected area.
Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Information regarding the patient's past and present health status is essential in providing appropriate diagnostic ultrasound information. Must obtain this especially if nothing has been provided from the referring MD.

An examination of the abdomen includes assessment of the gallbladder, biliary tract and kidneys, and in the pelvic urinary bladder, adnexa and female uterus, ovaries, or male prostate.
The RLQ for appendix.
Each slide should be labelled with the orientation of view and the name of the organ.
Female Pelvis:
Always document LMP and/or any relevant clinical information such as postmenopausal, HRT use, in vitro fertilization or fertility meds.

All relevant structures should be identified and recorded by the abdominal and/or vaginal approach.

The vaginal transducer may be introduced by the patient, or sonographer.

It is highly recommended that a woman be present in the examining room during vaginal sonography, either as an examiner or a chaperone.

Gallbladder

Long axis and transverse views in both the supine position. Other positions such as Lt lateral decubitus, and erect. Prone may also be helpful for evaluation.

Document transaxial measurement, if distended (>4cm). Assess the

gallbladder wall for morphology and thickness.

Evaluate the intraluminal content including the presence of sludge or stones and their mobility.

Always measure the largest stone or polyp, if present.

Document the presence/absence of transducer tenderness. Comment on the Murphy's sign, positive or negative

Biliary Tract

Long axis views of the common hepatic duct,
Common bile duct and along the dorsum of the pancreatic head. Document

bile duct caliber, measured in mm.

Evaluate bile duct caliber, wall thickness, and bile duct content.

Need to follow common bile duct throughout the entire length to ampulla to exclude choledocholithiasis for post-cholecystectomy patients with recurrent pain.

Evaluate intrahepatic ducts in the periphery of the liver and in the region of the porta hepatis adjacent to the right and left branches of the portal vein.

Follow dilated intrahepatic ducts centrally to assess for obstructing liver masses.

Duplex and colour Doppler may be used to differentiate hepatic artery and portal vein from bile ducts

Assess for intraperitoneal free fluid, and state presence or absence.

Bowel may be evaluated for wall thickening, dilation, masses, and other abnormalities.

Kidneys

Long axis views.

Transverse views: upper, mid (hila) and lower poles. Obtain views

in the supine and decubitus positions.

Document renal size. If less than 16 years of age include a normal range.

Evaluate size, contour, mobility, location, and renal parenchyma (cortex and medulla). Compare echogenicity with liver.

Evaluate renal sinus for focal or diffuse abnormality.

Evaluate the renal collecting system for dilation, appearance of the uroepithelium and content.
Measure AP dimension of the renal pelvis from a transaxial view, if there is pelvicaliectasis.

If there is dilatation of the collecting system, check the bladder for ureteric jets and other anomalies such as a cystocele in the bladder. Then recheck the dilatation of the collecting system post-void.

Assess the perirenal region for any abnormality.

Duplex and colour Doppler may be used in differentiating minor degrees of dilatation of the collecting system from blood vessels.

Female Pelvis: Transabdominal and Transvaginal

Long axis and transverse views of the uterus and ovaries. Long axis views of the iliac vessels.

Evaluate uterine size, shape and orientation (version).

Evaluate and document uterine length (fundus to the cervix) and AP diameter in its long axis, width is measured from the transaxial or coronal view.

Examine myometrium and cervix. Evaluate for contour changes, echogenicity and masses.

The vagina should be imaged as a landmark for the cervix and lower uterine segment.

Document any abnormalities of the uterus. Specifically for fibroid documentation, if more than 1, document the 3-dominant fibroids including the largest. Measure in 3 dimensions (LxWxH) Label fibroids on images acquired and on the technologist's worksheet (draw diagram). Describe on the worksheet the size and location of the mass and in which layer of the uterine tissue
(submucosal, intramural or subserosal.) Also, if it is in the fundus vs body of the uterus and anterior or posterior.

Examine and document endometrial thickness in the long axis view and evaluate its echogenicity and position. Image with the endometrial stripe along the entire length. Any fluid within the endometrial cavity should be excluded from the measurement.

Use colour Doppler interrogation for clinical situations where retained products of conception are questioned and endometrium is >5mm, or if assessing for a polyp. If 2 endometrial stripes are seen near the fundus, assess uterine fundal contour (coronal views) to assess if bicornuate or subseptate uterus (especially for infertility).

Evaluate the size, shape, echogenicity and contour of the ovaries.

Document the size of the ovaries (LxWxH) on views obtained in 2 orthogonal planes. Calculate ovarian volumes for all cases that question ovarian cancer, ovarian torsion and polycystic ovarian disease. Document the presence or absence of blood flow in the ovaries.

Assess the size and characteristics of adnexal masses and evaluate their relationship with ovaries. This should include Doppler interrogation.

If ovaries cannot be identified, image adnexa to iliac vessels.

Evaluate the cul de sac and posterior to the uterus for the presence of free fluid or masses. If there is more than a small/physiological amount of free fluid in
cul de sac, check Morrison's pouch and flanks.

Always evaluate the bladder wall and perform pre and post-void.

Long axis views of iliac vessels.

Male Pelvis:

Evaluate bladder wall and perform pre and post-void. Long axis views of iliac vessels.

RLQ:

Evaluate the RLQ with graded compression. Comment regarding tenderness and rebound pain.

This should be done on an empty bladder using the high-frequency linear probe. Identify the ascending colon and then move inferiorly to localize the terminal ileum. The appendix arises approximately 1-2 cm below the terminal ileum and is usually anterior to the iliac vessels and psoas muscle. Start in the RUQ and slide inferiorly to the area of maximum tenderness in a transverse plane and image in both transverse and sagittal planes every 1cm.

The appendix is a blind-ending tube. Measure the AP diameter and assess for compressibility, an appendicolith, and free fluid. Mesenteric fat should be evaluated and the presence of any enlarged lymph nodes in the surrounding area.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Hernia US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE AJR Ultrasound of the Groin: Techniques, Pathology, and Pitfalls	EFFECTIVE DATE November 2017

Hernia Ultrasound

Preparation:

No preparation is required.

Indications:

For Hernia Ultrasound include but are not limited to:

- Pain in the groin area
- Evaluation of the location and characteristics of a palpable mass (lump or bump)
- Evaluation of abnormalities detected by other imaging examinations
- Follow-up of previous imaging

Equipment:

Studies should be conducted with a real time scanner, using linear transducer 10MHz or greater.
A 5.0MHz transducer is recommended for a very muscular area.
Doppler frequencies used should be the highest possible to optimize resolution and flow detection.
The total Ultrasound exposure should be kept as low as reasonably achievable (ALARA principle)

Technique:

The exam should be performed over the area of concern.

Inguinal Region Hernias

Indirect hernia:
Scan the short axis from the rectus abdominis muscle, inferior to the umbilicus Continue inferiorly to the epigastric artery (colour doppler may help with identification) and move laterally, this is the area of the inguinal ring.
With Valsalva maneuver, an indirect inguinal hernia is seen as a bulge arising from the deep ring, lateral to the inferior epigastric vessels.

Direct inguinal hernia:
Scan slightly more inferior and medial to the deep ring and perform Valsalva technique.
Direct inguinal hernia is seen as a bulge arising medial to the inferior epigastric vessels.
Slightly inferior and medial to the deep ring.

Femoral hernia:
Scan below the inguinal ligament. Landmark the saphenofemoral junction and with Valsalva maneuver, femoral hernia is seen as a bulge medial to the femoral vein.

Measure the hernia in 3 dimensions, LxWxH.
Comment on the contents of the hernia sac; bowel, fat or both.
Document the presence of peristalsis, colour flow and the reducibility of the hernia sac.

Abdominal Hernias

Scan area of concern. Document the presence of small bowel loops, mobile colon or mesenteric fat. Perform Valsalva technique. Measure hernia in 3 dimensions, LxWxH. Document the presence of colour flow.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Scrotal US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CAR Standard for Performing Scrotal Ultrasound Examinations - Approved April 28, 2011 AIUM – Revised 2010 – 2006 Practice Guidelines	EFFECTIVE DATE July 15, 2009

Scrotal Ultrasound

Preparation:

No preparation is required.

Indications:

For Scrotal Ultrasound include but are not limited to:

- Evaluation of scrotal pain including but not limited to trauma, ischemia/torsion, infection or inflammatory scrotal disease
- A palpable mass
- Scrotal asymmetry, swelling or enlargement
- Evaluation of potential scrotal hernia
- Detection/evaluation of varicoceles
- Location of undescended testes
- Evaluation of male infertility

Equipment:

Studies should be conducted with a real-time scanner, using a linear or curved linear transducer. The frequencies are usually at 7 MHZ or higher. Resolution should be of sufficient quality to routinely differentiate small cystic from solid lesions.
Doppler frequencies used should be the highest to optimize resolution and flow detection. Doppler frequencies range from 3.5 to 10 MHZ. The total ultrasound exposure should be kept at as low as reasonably achievable. (ALARA principle)

Technique:

Each picture should be labelled with the orientation of view and name of the organ. Long

axis and transverse views of the testicles and epididymis.

Transverse images should be obtained in superior, mid and inferior portions of the testes, and longitudinal images medially, centrally, and laterally.

Image with transverse views of right and left testicles to compare echogenicity and texture, in greyscale and colour doppler imaging.

Evaluate epididymii (head, body and tail), when technically feasible, and testicular size, location and morphology.

All abnormalities of the testicle or epididymis should be documented and measured in 3 planes.

Evaluate testicular parenchyma for the presence of focal or diffuse disease.

Evaluate and document testicular blood flow including colour and spectral tracing showing arterial flow. Keep all technical settings the same when comparing each side.

Compare and document colour Doppler of testicles and epididymii to help rule out epididymitis. Assess and document with colour the epididymii with the testicle.

Scrotal skin thickness should be evaluated. If a palpable abnormality is present, this area should be directly imaged.

Assess any other scrotal contents including varicoceles (evaluate varicoceles with Valsalva technique) and fluid.

The contents of the tunica vaginalis should be assessed.

For an undescended testicle: scan the inguinal canal the pelvis.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Thyroid US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CAR Standard for performing thyroid and parathyroid US – approved April 28, 2011 AIUM 2013 Practise Guideline ACR TI-TADS	EFFECTIVE DATE July 15, 2009

Thyroid - ACR TI-RADS

Preparation:

No preparation is required.

Indications:

For Thyroid Ultrasound include but are not limited to:

- Evaluation of the location and characteristics of palpable neck masses, including an enlarged thyroid
- Evaluation of abnormalities detected by other imaging examinations i.e. Carotid US
- Abnormal lab results
- Evaluation of the presence, size and location of the thyroid gland
- Follow-up of previous imaging of nodules
- Evaluation for regional nodal metastasis with previous thyroid CA
- Evaluation for recurrent disease after partial or total thyroidectomy
- Identification and localization of parathyroid
- Identify cancer and minimize benign biopsy

Equipment:

Studies should be conducted with a real-time scanner, using a linear transducer 10MHz or greater.
A 5.0MHz transducer is recommended for a very muscular neck or a patient with a large amount of subcutaneous tissues. Doppler frequencies used should be the highest possible to optimize resolution and flow detection.
The total Ultrasound exposure should be kept as low as reasonably achievable (ALARA principle)

Technique:

The exam should be performed with the neck hyperextended.

Obtain and label the transverse view of the isthmus and long axis and transverse views of both

lobes.

Transverse views of the thyroid should include images of the superior, mid and inferior portions of the right and left lobes.
Longitudinal images should include medial, mid and lateral portions of each lobe.

Document the date of the previous ultrasound performed.
Document the size of both lobes in three dimensions. Recorded LxWxH

Obtain and evaluate colour Doppler views of both lobes in sagittal and trx and comment if normal, increased or decreased flow. In patients that have undergone complete or partial thyroidectomy, the neck should be imaged in trx and longitudinal planes.

Evaluate the entire organ and assess for any abnormalities.
Comment and document with respect to echogenicity: homogenous, heterogeneous, or multinodular.

Thyroid abnormalities should be documented for the total number of nodules seen greater than 1cm: 1-4, 5-10, or >10.
Record only 1-4 worrisome nodules by TI-RADS criteria including which lobe the nodule was seen, i.e. right or left. Mark one criteria under composition, echogenicity, shape, and margin, and all applicable criteria under echogenic foci. These criteria will determine a total point value and TI-RADS level. Do not measure nodules less than 1 cm unless worrisome and record 7+ points. Do not measure cysts unless palpable, or requested on the patient requisition and then mention in the comment section on your worksheet only.

The same nodules should be followed in subsequent exams if possible and previous nodule measurements should be included beside the current measurement for comparison.

Nodules must be drawn on the diagram with the referring number beside it.

Always evaluate the vessels for adjacent lymphadenopathy and thrombosed veins. Lymph node evaluation should include size and location. Levels evaluated should include 2-4, lateral compartment and 6, central compartment. Level 1 submandibular should not be included. See image.
Only measure and record abnormal lymph nodes: 0.8cm in short axis and have other suspicious features, such as hilar compression/displacement/replacement, calcifications, round instead of oval shape, microcalcifications, cystic or necrotic, peripheral vascularity, hyperechoic tissue looking like thyroid. A node of any size with microcalcifications must be recorded. All abnormal nodes must also be drawn on the diagram.

It is often necessary to extend imaging to include the soft tissue above the isthmus. (Evaluate possible pyramidal lobe, thyroglossal duct cyst)

Parathyroid

The exam should be performed with the neck hyperextended.

Examination for suspected parathyroid enlargement should include images in the region of the anticipated location of the parathyroid glands.

The exam should include images from the carotid arteries to the midline bilaterally and extending from the hyoid bones superiorly to the thoracic inlet inferiorly.

Normal parathyroid are usually not visualized but enlarged parathyroid glands in the neck may be seen. If seen, size, number, and location should be documented. Measurements of the parathyroid should be made in at least 2 and preferably 3 dimensions.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Neck/Submandibular/Parotid US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: August 2017, March 2021	REFERENCE AIUM – 2013 Practice Guidelines	EFFECTIVE DATE August 8, 2017

Neck /Submandibular/Parotid Ultrasound

Preparation:

No preparation is required.

Indications:

For Neck Ultrasound include but are not limited to:

- For evaluation of the thyroid refer to Thyroid protocol
- Evaluation of abnormalities detected by other imaging examinations e.g. Carotid US
- Abnormal lab results
- Lymphadenopathy
- Palpable area in the neck
- Swollen glands

Equipment:

Studies should be conducted with a real-time scanner, using a linear transducer 10MHz or greater.
A 5.0MHz transducer is recommended for a very muscular or fat neck.
Doppler frequencies used should be the highest possible to optimize resolution and flow detection.
The total Ultrasound exposure should be kept as low as reasonably achievable (ALARA principle)

Technique:

The exam should be performed with the neck hyperextended.

Images of the palpable area should be taken with an explanation and diagram of the location on your worksheet.

Transverse and longitudinal views of the submandibular and parotid glands. Evaluate the entire organ. Document size in three dimensions, L x H x W in cm. Comment on the echotexture of the whole gland as homogeneous or heterogeneous. Comment on the flow of the glands using colour Doppler as normal, increased or decreased.

Evaluate around the glands for lymph nodes. Describe the location of the lymph nodes.

Evaluate along the vessels for adjacent lymphadenopathy.

Lymph node evaluation should include the largest on each side and have any of the following characteristics: thick cortex, loss of fatty hilum, central necrosis, round shape or microcalcifications.
Measure only if the short axis is greater than 8mm

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Superficial Soft Tissue US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE February 23, 2016

Superficial Soft Tissue

Preparation:

No preparation is required.

Indications:

For SST Ultrasound include but are not limited to:

- Evaluation of the location and characteristics of a palpable mass (lump or bump)
- Evaluation of abnormalities detected by other imaging examinations
- Follow-up of previous imaging
- Hands, fingers, and soles of the foot bumps are **NOT** to be imaged, and sent to the local hospital for further MSK evaluation
- SST should **NOT** be done for swelling or pain and sent to the local hospital for consultation

Equipment:

Studies should be conducted with a real-time scanner, using a linear transducer 10MHz or greater.
A 5.0MHz transducer is recommended for a very muscular area.

Doppler frequencies used should be the highest possible to optimize resolution and flow detection.
The total Ultrasound exposure should be kept as low as reasonably achievable (ALARA principle)

Technique:

The exam should be performed on the area of concern. Document the size in three dimensions (LxWxH).

Comment and document with respect to echogenicity composition (degree of cystic change), margins (smooth or irregular), presence and type of calcifications (if present and other relevant sonographic patterns).

Comment on whether the lump is soft or not, and if there is any skin discoloration.

The abnormality should be documented with the location, size, and a picture diagram on your worksheet.

Obtain and evaluate with colour Doppler.

Comparison to an opposite side of the body may be necessary.

Additional Comments:

If a patient presents in the department with swelling, pain, or lump, we should proceed with the scan and look for any fluid or mass and explain on the tech worksheet, so the pt feels they have received care.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Obstetrical <16 weeks US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CAR Standard for Performing Obstetric Ultrasound Examinations - Approved September 2012 AIUM Practice Guidelines 2013 Fetal Medicine Foundation www.fetalmedicine.org	EFFECTIVE DATE July 16, 2009

Obstetrical First Trimester < 16 weeks

For an OBS sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void. For a vaginal sonogram, the urinary bladder is preferably empty.

Indications:

For First Trimester Obstetrical Ultrasound includes but is not limited to:

- Confirmation of the presence of an intrauterine pregnancy
- Evaluation of a suspected ectopic pregnancy
- Pelvic pain
- Defining the cause of vaginal bleeding
- Dating
- Evaluation of multiple gestations
- Confirmation of cardiac activity
- Assessing for certain fetal anomalies
- Evaluation of maternal pelvic mass and/or uterine abnormality
- Measuring of NT
- Evaluation of suspected Hydatidiform mole

Equipment:

Studies should be conducted with real-time scanners, using an abdominal and/or vaginal approach. Fetal ultrasound should be performed only when there is a valid medical reason. Real-time examination is necessary to confirm a live fetus through the observation of cardiac activity and active movement. The highest frequency transducer providing adequate resolution should be used, usually 3 to 5 MHz abdominal transducers. A lower frequency transducer may be needed to provide adequate penetration for abdominal imaging in an obese patient. Image quality should be optimized while keeping

total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

During early pregnancy, a vaginal transducer with a frequency of 7MHZ or greater may be used to detect the presence of a yolk sac, embryo or cardiac activity.

M-mode should **ONLY** be used instead of spectral Doppler imaging to document embryonic/fetal Heart Rate. Always try to estimate the approximate gestational age and document it on the worksheet using the LMP, and **first** ultrasound examination.

Document the presence and location of the gestational sac. The uterus, including the cervix and adnexa, should be evaluated for the presence of a gestational sac. If a gestational sac is present with NO embryo, or cardiac activity, a mean gestational sac size should be obtained.

In cases involving a bicornuate uterus, always indicate (horn) location of the intrauterine gestational sac. If an embryo is present, the CRL should be recorded.

The yolk sac and embryo should be identified and labelled. Yolk sac size and crown-rump length should be documented.

During the late first trimester, biparietal diameter and other fetal measurements may also be used to establish fetal age.

Document the presence or absence of cardiac activity with m-mode if possible,
Real-time observation is critical in this diagnosis and endovaginal scanning may be necessary.
Document fetal cardiac heart rate. (Using vaginal sonography cardiac activity is usually detectable if the embryo is 5mm or more in length)
If an embryo with cardiac activity is not present, evaluate and attempt to determine, if the sac is in fact an intrauterine pregnancy rather than a decidual cast **or** if early pregnancy failure has occurred as opposed to a normal pregnancy examined prior to visualization of the embryo.

If IVF or fertility patient, this increases the risk of heterotopic pregnancy up to 1:100. Must carefully evaluate both adnexa by scanning transversely between ovaries and uterus.

Document and label fetal number or gestational sacs when early pregnancy is examined prior to embryo visualization. Chorionicity and amnionicity should be determined.

Due to adjacent hypoechoic endometrium on a small implantation bleed or subchorionic hemorrhage, a second sac-like structure is often present but should not be confused with a gestational sac. The absence of a yolk sac, the embryo and its irregular shape help differentiate it from a full sac.

Endovaginal scanning will enhance visualization of gestational sac and sac contents if there is any question of fetal pole or heart rate.

If on transabdominal imaging a fetal pole or heart rate are not detected, a transvaginal examination <u>should be performed</u> unless there is a contraindication or if the patient refuses. Evaluate and label the uterus (including the cervix), ovaries (transverse and sagittal views) and adnexa. If the ovaries cannot be identified, image the adnexa and document the ovaries could not be seen.

Document and label 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.

Documentation of the placenta cord insertion site when possible.

Document and label the presence of the following anatomical structures if seen. Head - cranium, ventricles posterior fossa
Neck - NT
Face - Nasal bones. orbits, mandible Heart - position, heart rate, 4 chambers
Abdomen - stomach, abdomen wall, kidneys, bladder Spine - Neck to sacrum with skin surface Extremities - 4 limbs

If the crown-rump length of the embryo measures between 41mm – 84mm, then the nuchal translucency must be measured, if asked by a referring physician, and documented using the specified criteria on the following page.

Measurement of Nuchal Translucency

Ultrasonographers must have received a valid certification to perform

The minimum fetal crown-rump length should be 41mm and the maximum 84mm.
(The optimum gestational age for measurement of fetal nuchal translucency is 11w to 13w6d)
A bi-parietal (BPD) measurement is required between 14mm and 26mm
(12w to 14w+4d)

<u>Guidelines for NT Measurements:</u>

1. The margins of the NT must be clear enough for proper placement of the calipers
2. The fetus must be in a mid-sagittal plane The image must be magnified so that it is filled by the fetal head, neck, and upper thorax
3. The fetal neck must be in the neutral position, not flexed and not hyper-extended
4. The amnion must be seen as separate from the NT line
5. The + calipers must be placed on the inner borders of the nuchal line
6. The calipers must be placed perpendicular to the long axis of the fetus.
7. The measurement must be obtained at the widest space of the NT

The fetus can be bounced off the amnion by asking the mother to cough.

Partners can only come in AFTER the medical exam has been completed.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Obstetrical > 16 weeks US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: September 8, 2014, March 31, 2015, September 3, 2019, April 14, 2022	REFERENCE CAR Standard for Performing Diagnostic Obstetric Ultrasound Examinations – Approved September 25, 2010 AIUM – 2013 Practice Guideline	EFFECTIVE DATE July 15, 2009

Obstetrical Second & Third Trimester >16 weeks

Preparation:

For an OBS sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void.

For a vaginal or translabial sonogram, the urinary bladder is preferably empty.

Indications:

For Second/Third Trimester Obstetrical Ultrasound includes but is not limited to:

- Evaluation of fetal anatomy
- Screening for fetal anomalies
- Estimation of gestational age
- Evaluation of growth
- Evaluation of vaginal bleeding
- Evaluation of pelvic pain
- Evaluation of cervix
- Determination of fetal presentation
- Evaluation of multiple gestations
- Evaluation of pelvic mass
- Suspected Ectopic pregnancy
- Suspected Fetal demise
- Uterine Abnormality
- Evaluation of fetal well-being
- Evaluation of Amniotic fluid
- Suspected Placental abruption
- Follow up of evaluation of placental location (previa?)
- History of previous congenital Anomaly

Equipment:

Studies should be conducted with real-time scanners, using an abdominal and/or vaginal approach. Fetal ultrasound should be performed only when there is a valid medical reason. Real-time examination is necessary to confirm a live fetus through the observation of cardiac activity and active movement. The highest frequency transducer providing adequate resolution should be used, usually 3 to 5 MHz abdominal transducers. A lower-frequency transducer may be needed to provide adequate penetration for abdominal imaging in an obese patient. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

M-mode should be used instead of spectral Doppler imaging to document embryonic/fetal Heart Rate.

Technique:

Always try to estimate the approximate gestational age and document it on the worksheet using the **first** ultrasound examination, **last** ultrasound examination**,** and **EDC**. Need to compare growth with the most recent ultrasound to determine the interval/appropriate growth of the fetus. For growth comparison, use weeks as well as interval change in weight.

The following information should be documented and labelled:

i) fetal life, number and presentation,
ii) heart rate and/or rhythm,
estimate of the amount of amniotic fluid (increased, decreased, normal). If amniotic fluid volume is increased or decreased, calculate the amniotic fluid index. An AP measurement of the deepest amniotic pocket after 30 weeks.
iii) placental location, appearance and its relationship to the internal cervical os. Previa should be assessed at varied urinary bladder distention. Documentation of the placenta cord insertion site when possible.
Colour Doppler should be used to assess vasa previa or abnormal placental cord insertion.

iv) cervical length: If cervical length <3 cm or if cervical funneling is seen- do not let the patient leave the department without speaking to the radiologist first.
v) **3** Doppler ratios (ratio=systole/diastole) and document average measurements after 30 weeks

Assessment of gestational age is to be accomplished using the following:

i) biparietal diameter at the standard reference level (cavum septi pellucidi and the thalamus). Measure from the outer edge of the near field skull to the inner edge of the far field skull. If fetal head is dolichocephalic or brachycephalic, the BPD may be misleading)

ii) head circumference measured at the same level as the biparietal diameter. Measure around the outer perimeter of the calvarium.

iii) femur length -the long axis of the femoral shaft excluding the distal femoral epiphysis.

An inappropriate measurement 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

iv) abdominal circumference measured at the level of the junction of the umbilical vein and portal sinus, which should include the fetal stomach. Measure along the outer perimeter.
The fetal weight will be determined from the above measurements.

The anatomy study should include, but not necessarily be limited to, the following fetal anatomy. Each picture should be labelled with the name of the organ, orientation of view (if applicable), and left or right (if applicable).

Head:

- Skull shape
- Cerebral lateral ventricles, anterior horn
- Choroid plexus
- Cavum septi pellucidi
- Midline falx
- Cerebellum
- Cisterna magna with measurement (upper limit 1.0cm)
- Nuchal fold with measurement (upper limit of 5.6mm)

Face/Neck:

- Orbits
- Lips/nose – to exclude cleft lip
- Mandible

Chest:

- Heart axis/size/location
- 4 chamber – assess for echogenic intracardiac focus
- Outflow tracts
- 3 Vessel view including trachea when possible
- Aortic arch

Abdomen:

- Stomach – presence and position
- Kidneys – in trx and sag - if there is pelvicaliectasis, measure AP dimension of the renal pelvis
- Bladder
- Abd umbilical
- Number of umbilical vessels (2 arteries and 1 vein) including colour Doppler of fetal pelvis at the level of the urinary bladder
- Bowel

Spine:

- Cervical, thoracic, lumbar, sacral, in trx and sag with skin surface
- Including trx view of the lumbar spine showing ossification centres and the iliac wings

Extremities:

- All 4 limbs – show bones
- Presence of hands
- Presence of feet and when possible, an image of feet with a right-angle view of the tibia and fibula

Fetal anatomic structures should be recorded normal or abnormal (with details) or not adequately seen (with details)
NOTE: All fetal anatomy must be documented and labelled on all new patients. If you are not able to see all anatomy (after several attempts), rebook the patient within 1-2 weeks before she leaves.

Evaluation of the uterus and adnexal structures should be performed and labelled.

The presence, location and size of myomas and adnexal masses should be documented and labelled. In cases of low amniotic fluid volume and/or IUGR obtain an amniotic fluid index and measure the single deepest pocket.

Cervical length/Placenta previa: If incompetent cervix or placenta previa is in question, translabial or endovaginal scanning with an empty urinary bladder may be necessary (usually at the request of the referring physician). **If a <u>quality</u> cervical measurement of 3cm or greater is obtained POST VOID, translabial/endovaginal scanning is not required for cervical length.**

Third trimester does not require a full anatomical exam, but must do anatomy and record in the comment box in the following instances:

1. Call back for a specific piece of anatomy
2. Something noted during your exam
3. Area not well seen from a previous exam.

AFV only needs to be calculated if it is requested by the referring physician or if you feel the volume is low.

Partners can only come in AFTER the medical exam has been completed.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Obstetrical TWINS US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: September 8, 2014	REFERENCE CAR Standard for Performing Diagnostic Obstetric Ultrasound Examinations – Approved September 25, 2010 AIUM – 2013 Practice Guideline	EFFECTIVE DATE July 15, 2009

Twins

In addition to the 1st, 2nd and 3rd trimester criteria, include the following to confirm or rule out monoamniotic/monochorionic pregnancy:

Document and label the number of placentas and the presence/absence of separating membrane and membrane thickness.

Twins should be labelled consistently. Once a fetus is designated A or B, continue to label him/her as such for the duration of the pregnancy.

Always attempt to determine fetal gender at 18 weeks gestation or greater, to allow for specific fetal identification on follow-up exams.

Comparison of fetal sizes and comparison of amniotic fluid volume on each side of Membrane.

Always document which fetus is presenting and indicate on the diagram fetal lie and position.

Partners can only come in AFTER the medical exam has been completed.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Obstetrical Biophysical Profile US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015, March 31, 2015 October 4, 2018	REFERENCE CAR Standard for Performing Diagnostic Obstetric Ultrasound Examinations – Approved September 25, 2010 AIUM – 2013 Practice Guideline Mayo clinic www.mayoclinic.org	EFFECTIVE DATE July 15, 2009

Biophysical Profile

Preparation:

For a 0BS sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. A full bladder is necessary. Complete drinking 40 ounces/1 liter of clear fluid 1 hour prior to your appointment. Do not void.
For a vaginal or translabial sonogram, the urinary bladder is preferably empty.

Indications:

For a Biophysical Profile Ultrasound includes but is not limited to:

- Evaluation of Baby's growth
- History of pregnancy loss
- Multiple fetus'
- Decreased fetal movement
- Evaluation of amniotic fluid
- Underlying medical conditions of Type 1 diabetes, gestational diabetes, high blood pressure
- Underlying medical condition of thyroid, kidney or heart disease

Equipment:

Studies should be conducted with real-time scanners, using an abdominal and/or vaginal approach. The highest frequency transducer providing adequate resolution should be used, usually, 3 to 5 MHz abdominal transducers.
A lower-frequency transducer may be needed to provide adequate penetration for abdominal imaging in a larger patient. Image quality should be optimized while keeping total Ultrasound exposure as low as possible. (ALARA principle)
M-mode should be used instead of spectral Doppler imaging to document embryonic/fetal Heart Rate.

Technique:

Performed in the third trimester upon the request of the referring physician. Biophysical profile should be evaluated in a 30-minute time frame on a score out of 8 and evaluated but not limited to the following criteria:

Normal (score = 2)

i) Respirations of fetus	one episode x 30 seconds in 30 minutes
ii) Gross motor movement	three discreet body/limb movements in 30 minutes or less (episodes of continuous movement considered as single movement).
iii) Tone	one episode of active extension with the return to flexion of fetal limb(s) or trunk; opening and closing of hand considered normal tone.
iv) Amniotic fluid volume	one pocket of fluid measuring >/= 2cm in the vertical axis.

When gross motor movement and/or tone are not present during the 30 minute time frame, the scan should be extended to 45 minutes. If these criteria are still not present, the Radiologist must be notified before the patient leaves the department.

Perform and document a Doppler interrogation of the umbilical artery and obtain **3** Doppler ratios (ratio=systole/diastole) and document **average**. The upper limit of a normal Doppler ratio is 3:1 in the third trimester.
Perform and document SDP.

Partners can only come in AFTER the medical exam has been completed.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Obstetrical Repeat Exams US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: March 31, 2015	REFERENCE	EFFECTIVE DATE July 15, 2009

Obstetrical Repeat Exams

On 2nd and 3rd trimester exams, measurements need only be repeated after an interval of two weeks unless otherwise requested by the referring physician.

For repeat obstetrical examinations with measurements, re-evaluate all major fetal anatomy and show a Fetal Heart tracing.

For repeat examinations without measurements performed, must image at least cerebral ventricles, 4 chamber heart and outflows with a Fetal Heart tracing, stomach kidneys and bladder in all cases.

Partners can only come in AFTER the medical exam has been completed.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Translabial US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE February 2018

Translabial Ultrasound

Preparation:

The urinary bladder is empty for a Translabial/Transperineal ultrasound Consent: Verbal consent is obtained after explanation to the patient

Indications:

- When a TV is indicated and cannot be done
- To evaluate pelvic floor
- For 3rd trimester obstetrical to view cervical length

Contraindication: Patient refuses

Equipment:

Studies should be conducted with a real-time scanner, using sector or curved linear transducers with frequencies between 3.5MHz and 5.0MHz.
Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Procedure:

- Before starting, clean the probe with a LLD wipe
- Gloves are worn
- Sterile one-time-use gel is applied to the probe
- The sterile probe cover is applied, using an aseptic technique
- One-time use lubricating gel is applied, using an aseptic technique

Have the patient lie on the table with hips and knees flexed, while the covered transducer is positioned on the perineum in sagittal orientation between the patient's labia majora. Elevation of the patient's hips with a cushion or wedge will often improve visualization.
For cervical length identify the internal and external os and place the calipers along this area for cervical length.

Post Probe Cleaning: **follow the same as TV reprocessing

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Shoulder US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015, March 31, 2015	REFERENCE CAR Standard for the performance of Musculoskeletal Ultrasound Examination - Approved September 2005	EFFECTIVE DATE July 15, 2009

Shoulder Ultrasound

Preparation:

No preparation is required.

Indications:

For Shoulder Ultrasound include but are not limited to:

- Rotator cuff and biceps tendon pathology including tendinopathy, tear and impingement
- arthritis
- trauma
- soft tissue masses
- suprascapular nerve entrapment
- effusion and evaluation bursae and acromioclavicular joint

Equipment:

Studies should be conducted with a real-time scanner, using a linear 9-15 MHz transducer, depending on the size of the patient. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Information regarding any previous surgery to the shoulder should be documented.

A posterior transverse view of the glenohumeral joint, showing the labrum and any joint fluid should be obtained with the arm in a neutral position.

Each tendon of the rotator cuff (teres minor, infraspinatus, subscapularis and supraspinatus) should be examined with images documented in long-axis and short-axis views. Infraspinatus and teres minor can be imaged together in short axis. Supraspinatus should also have color Doppler image in long axis.

The long head of the biceps should be documented in long axis and short axis views with color Doppler short axis view as well.

All tears should be measured in the long axis and short axis and described as partial or full thickness (humeral to bursal surfaces) and focal or complete (anterior to posterior for supraspinatus and superior to inferior for other rotator cuff tendons).

Tendinosis should be documented but not measured. Biceps tears should have gap measured.

Supraspinatus should be assessed for impingement in abduction and in flexion unless the tendon is completely torn. Images should document the tendon in neutral and abduction on split screen and then in neutral and flexion on split screen. If pain limits range of motion, then this should be documented on a worksheet.

Coronal plane image of the acromioclavicular joint should be documented.

Any subdeltoid bursal fluid or synovial hypertrophy should be documented in the plane best visualized, along with color Doppler image as well.

Minimum 15 images for a normal shoulder:

i) Posterior joint
ii) Long axis infraspinatus
iii) Long axis teres minor
iv) Short axis infraspinatus and teres minor
v) Long axis subscapularis
vi) Short axis subscapularis
vii) Long axis supraspinatus
viii) Long axis supraspinatus with Doppler
ix) Short axis supraspinatus
x) Long axis biceps
xi) Short axis biceps
xii) Short axis biceps with Doppler
xiii) Split screen for abduction impingement
xiv) Split screen for flexion impingement
xv) AC joint coronal.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Shoulder US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015 March 31, 2015	REFERENCE Philips www.healthcare.philips.com	EFFECTIVE DATE July 15, 2009

Popliteal Fossa

Preparation:

No preparation is required.

Indications:

For Popliteal Fossa Ultrasound includes but is not limited to:

- Pain
- Swelling of the knee

Equipment:

Studies should perform using a 5MHz linear transducer. For large extremities, may need to use curved linear 2-4MHz transducers. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Obtain and label sagittal and transverse views.

Include a sagittal view of popliteal vessels, with compression.

If a Baker's cyst is identified, document spectral analysis to rule out an aneurysm by demonstrating the absence of blood flow.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Achilles Tendon US** **Plantar Fasciitis US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE AIUM Practice Parameter for the Performance of a Musculoskeletal	EFFECTIVE DATE December 1, 2017

Achilles Tendon Ultrasound

Preparation:

No preparation is required.

Indications:

For Achilles tendons include but are not limited to:

- Pain
- Tendinopathy

Equipment:

Studies should be performed using a 12 -18MHz linear transducer. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

The patient should lie prone on the stretcher with feet dangling off the edge, and dorsiflexion of feet.

A comparison of both sides may be necessary for the evaluation of the affected area. An order must be on the requisition for it to be billed.

Obtain and label sagittal and transverse views of the Achilles tendon, from the calcaneal insertion to the calf.

Measure and document the maximum AP diameter of the tendon distally in the transverse plane and compare to the opposite side at the same level. Document any other changes in the thickness of the tendon. (Normal <6mm, >8mm is abnormal) Comment on echogenicity.

Document the length and width of the tear, or if possible, in 3 dimensions. Measure the distance of the tear to the calcaneal insertion, for full thickness complete tear. Comment if tendinosis is present.

Dynamic scanning with plantar and dorsal flexion may help to distinguish the extent of a complete tear. Colour flow should also be applied to document any hyperemia.

Assess and document any free fluid seen in the bursa or subcutaneous tissues.

Evaluate the proximal myotendinous junction. Check for fluid deep to the medial gastrocnemius muscle and superficial to the soleus muscle. This can indicate a tear of the medial gastrocnemius myotendinous junction or rupture of the plantaris tendon ("tennis leg").

	SIGNATURE	EFFECTIVE DATE December 1, 2017
LAST REVISION DATE:	REFERENCE	

Plantar Fasciitis Ultrasound

Preparation:

No preparation is required.

Indications:

For include but not limited to:

- Pain

Equipment:

Studies should be performed using a 12-18MHz linear transducer. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

The patient should lie prone on the stretcher with feet dangling off the edge, and dorsiflexion of feet.

A comparison of both sides may be necessary for the evaluation of the affected area. An order must be on the requisition for it to be billed.

Obtain and label sagittal and transverse views from the proximal medial fascia to the distal fascia and from the lateral fascia to the distal fascia.

In the sagittal plane make an AP measurement at the proximal plantar fascia, at the point where it leaves the calcaneal tuberosity, and measure any focal or diffuse thickening or abnormality along the fascia.

Document any nodules within the fascia, and measure LxWxH (>4.5mm is suggestive of plantar fasciitis).
Comment on echogenicity and presence of hyperemia. Document any associated calcaneal spurring.
Colour flow should also be applied to demonstrate the presence of vascularity.

Assess and document any fluid in the subcalcaneal bursa or superficial to the plantar fascia.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Trochanteric Bursitis US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE AIUM Practice Parameters	EFFECTIVE DATE October 2020

Greater Trochanter Ultrasound

Preparation:
No preparation is required.

Indications:

For Trochanteric Bursitis Ultrasound includes but is not limited to:

- Hip pain
- Trauma
- Gluteal pain
-

Equipment:

Studies should be conducted with a real-time scanner, using a linear 9-15 MHz transducer. For larger patients, the linear 4-7 MHz transducer may be needed. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

The patient should lie in the lateral decubitus position, with symptomatic hip available for scanning.

Transverse and longitudinal scans of the greater trochanter, greater trochanteric bursa, gluteus medius, gluteus maximus, gluteus minimus, iliotibial band, and tensor fascia latae should be performed.

Images include coronal and transverse views of the anterior facet of the greater trochanter at the gluteus minimus tendon insertion, the lateral and superoposterior facets at the gluteus medius tendon insertions, the iliotibial band and the greater trochanteric bursa at the level of the posterior facet.

Documentation of fluid should be recorded.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Carotid Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015	REFERENCE CAR Standards for Specific Anatomical Areas (Vascular Ultrasound) Approved March 2002 Mayo clinic www.mayoclinic.org	EFFECTIVE DATE July 15, 2009

Carotid Doppler

Preparation:

No preparation is required.

Indications:

For Carotid Ultrasound include but are not limited to:

- Family history of cardiovascular disease
- Syncope
- Risk of Atherosclerosis
- Syncope
- TIA
- High Blood Pressure
- Diabetes
- Bruit of carotid arteries

Equipment:

Studies should include both duplex and colour Doppler with a 5MHz or greater linear transducer. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

With the patient lying supine, begin at the base of the neck and identify the most proximal portion of the Common Carotid artery in the transverse position.
Scanning cephalad, identify and obtain transverse images of the Common carotid, External and Internal Carotid arteries.

Note the presence and location of plaque as well as the location of the internal and external carotid arteries.

Describe the plaque morphology (echogenicity, surface and texture).

The ICA generally lies lateral to the ECA. The ECA is identifiable by its branches or temporal tap.
In the sagittal plane, starting in the most proximal portion of the CCA, obtain images of the CCA, ECA and ICA, noting the location and presence of any plaque in this view.

Note if the plaque contains any calcification and/or shadowing.

Using colour doppler, obtain images of the extracranial vessels noting any lumen reduction and colour aliasing.

Obtain and record peak velocities of the CCA, ECA and ICA. Obtain and

record the ICA/CCA ratio.

Document proximal, mid and distal ICA systolic and diastolic velocities.

The peak systolic and end diastolic velocities should be documented at the stenosis/area of disease. If plaque is not present, the velocity and ICA/CCA ratio should still be obtained at the proximal ICA, the area where disease most commonly occurs. A velocity measurement should be performed with an angle of 60 degrees whenever possible, and always between 0-60 degrees

In a sagittal plane, mid-neck, angle the transducer laterally and obliquely until the vertebral artery is identified. Obtain and record a doppler signal to confirm the direction of vertebral artery flow.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Upper Extremity Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015	REFERENCE	EFFECTIVE DATE July 15, 2009

Upper Extremity Doppler

Preparation:

No preparation is required.

Indications:

For Peripheral Arm Doppler Ultrasound includes but not limited to:

- Evaluation of possible venous thrombus
- Venous obstruction in symptomatic or high-risk asymptomatic individuals
- Follow-up for patients with known venous thrombus
- Assessment of Dialysis access

Equipment:

Studies should include both duplex and colour doppler using a 5MHz linear transducer. For large extremities, may need to use curved linear 2-4MHz transducers. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Image from the ipsilateral internal jugular vein to the elbow.

1. Internal jugular vein: examine with compression in the transverse plane and follow inferiorly to junction with subclavian and upper brachiocephalic veins. In addition, use colour flow Doppler sonography, transmitted cardiac pulsatility and respiratory phasicity to assess venous patency.

2. Subclavian vein: attempt compression but limited with supraclavicular and infraclavicular approaches. Use colour flow Doppler and respiratory phasicity as well. The normal position of the subclavian vein is inferior and superficial to the subclavian artery (sometimes large venous collaterals can be mistaken for subclavian vein).

3. Axillary vein: compression in a transverse plane every centimeter to bifurcation. Use colour flow Doppler, respiratory variation and augmentation.

4. Brachial vein (follows artery), Basilic and Cephalic veins should be evaluated to elbow with compression, respiratory variation and augmentation.

If there is a line in-situ, document the line and assess for surrounding thrombus. If there is a thrombus visualized, attempt to document the proximal extent.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Venous Leg Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: February 12, 2015	REFERENCE CAR Standards for Specific Anatomical Areas (Vascular Ultrasound) - Approved March 2002 AIUM Practice Guidelines 2010	EFFECTIVE DATE July 15, 2009

Peripheral Venous Leg Doppler

Preparation:

No Preparation is required.

Indications:

For Peripheral Venous Leg Doppler Ultrasound include but are not limited to:

- Evaluation of possible venous thrombus Venous obstruction in symptomatic or high-risk asymptomatic individuals
- Follow-up for patients with known venous thrombus

Equipment:

Studies should include both duplex and colour doppler using a 5MHz linear transducer. For large extremities, may need to use curved linear 2-4MHz transducers. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Assess the Common Femoral vein longitudinally to identify any free-floating thrombus (no compression or augmentation should be used if this is found).

Scan in the transverse plane, beginning at the inguinal ligament and compress every centimeter to the Popliteal trifurcation.

Interrogate the Common Femoral, Superficial Femoral and Popliteal veins.

Assess the junction of the Greater Saphenous/Common Femoral veins and the junction of the Profunda/Superficial Femoral veins.

Obtain the following images of the CFV, SFV (proximal, mid, and distal), and the Popliteal vein and label accordingly:

i) without compression
ii) with compression
iii) with doppler to show spontaneous flow, phasicity and distal augmentation
iv) the valsalva maneuver may also be used in this examination

If thrombus is discovered during the compression views, further compression and augmentation should not be attempted.

If a thrombus is discovered, take sagittal images to assess the length of the thrombus and measure the proximal edge of the thrombus from a landmark.

If a thrombus is identified in proximal CFV, evaluate the external iliac vein, common iliac vein and IVC for thrombus

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Arterial Leg Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE: March 31, 2015	REFERENCE CAR Standards for Specific Anatomical Areas (Vascular Ultrasound) - Approved March 2002 AIUM Practice Guidelines 2014 The College of Physicians of Ontario Independent Health Facilities Clinical Practice Parameters and Facility Standards	EFFECTIVE DATE July 15, 2009

Arterial Leg Doppler

Preparation:

No Preparation is required.

Indications:

For Arterial Leg Doppler Ultrasound include but not limited to:

- Detection of stenosis or occlusions in segments of the peripheral arteries in symptomatic patients with suspected arterial occlusive disease.
- Monitoring of sites of previous surgical interventions, including sites of previous bypass surgery
- Monitoring of sites of various percutaneous interventions, including angioplasty, thrombolysis/thrombectomy, atherectomy, and stent placements
- Follow-up for progression of previously identified disease, such as documented stenosis in an artery that has not undergone intervention, aneurysms, atherosclerosis, or other occlusive diseases
- Evaluation of suspected vascular and perivascular abnormalities, including such entities as masses, aneurysms, pseudoaneurysms, arterial dissections, vascular injuries, arteriovenous fistulas, thromboses, emboli, and vascular malformations

Equipment:

Studies should include both duplex and colour doppler using a 5MHz linear transducer. For large extremities, may need to use curved linear 2-4MHz transducers. Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Information regarding the patient's past and present health status is essential in providing appropriate diagnostic ultrasound information. This should include if there is pain, claudication, any discoloration of the skin, any amputations, inquire if there is any diabetes, CAD or smoking. Must obtain this especially if nothing has been provided from the referring MD.

Patient is to lie down in the supine position, flat is best, but the head can be raised slightly if the patient is uncomfortable. The patient should not be cold as this can cause vasoconstriction.

Velocity measurements are obtained from angle-corrected longitudinal spectral Doppler images. Every attempt should be made to acquire images where the angle created by the direction of blood flow and the direction of the ultrasound beam is kept at 60° or less.

Bilateral ABI's are to be taken first, with Continuous Wave Doppler and blood pressure cuffs. Perform bilateral arm pressures.

Evaluate using grey scale ultrasound and longitudinal views of the following arteries: Distal Aorta External Iliac, Common Femoral, Profunda, Superficial Femoral, Popliteal, Posterior Tibial, and Dorsalis Pedis

Evaluate any graphs and their anastomosis. Evaluate any

collateral flow that may have developed.

Evaluate the above vessels in a longitudinal view without colour and then obtain a velocity waveform using Doppler and colour.

Document any plaque.

Document ABI's.

Document velocities.

Perform exercise (pt should walk the hallways) for 10 minutes or until the pt feels pain, if possible

Repeat One pressure for each foot and ABI's with Continuous Wave Doppler.

Repeat Arm pressure after the lower limb measurement has been taken.

In evaluating bypass grafts, an attempt should be made to sample the full length of the graft, Velocity measurements should be recorded in the artery proximal to the graft anastomosis, at the proximal anastomosis, in the regions of suspected abnormalities, every 10 to 20 cm. along the graft, at the distal anastomosis, and in the artery distal to the anastomosis.

In evaluating patients who have undergone percutaneous interventions, an attempt should be made to sample the site of selective intervention as well as the segment immediately proximal and distal to the site of intervention and the velocity waveforms recorded.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Upper extremity Arterial & Vein Mapping/ Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE AIUM Practice Guidelines 2016	EFFECTIVE DATE March 2017

Vein & Arterial Mapping for Dialysis Access Creation
Upper Extremity Arterial Doppler Protocol:

Preparation:

No Preparation is required.

Indications:

For Peripheral Venous and Arterial Arm Doppler Ultrasound includes but is not limited to:

- To assess patency and size of arm veins prior to creation of hemodialysis access.
- To assess patency and configuration of arteries
- To evaluate DVT, SVT, PAD, TOS, Raynaud's syndrome etc.

Equipment:

- Studies should include both duplex and colour Doppler using Linear (L 7-4 MHz) and Convex (C5-1MHz) transducers.
- Pneumatic cuffs
- Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

Patient Introduction and Interview:

Obtain a patient's medical history e.g. arm pain, numbness, pain on exertion, ulceration, discoloration, coldness of hands etc.
Examine both upper extremities for signs of arterial disease e.g. peripheral pulses, coldness, ischemia/gangrene, bruit etc.
Have the patient disrobe from the waist up and put on a patient gown with arms bare.
Check to see if there is previous relevant imaging and if so review and document.

Procedure:

Examine the patient in supine position with a pillow under the head and shoulders. Turn the patient's head slightly away from the side of the examination.

Arterial Examination

The following arteries are to be examined:

- Subclavian Artery above clavicle
- Subclavian Artery below clavicle
- Axillary Artery
- Brachial Artery
- Radial Artery
- Ulnar Artery
- If indicate check Innominate Artery and Vertebral Artery

Begin scanning from the root of the neck above the clavicle and costo-clavicular joint. Scan below the clavicle up to the shoulder. Scan within the axilla with the arm slightly abducted. Scan along the medial aspect of the upper arm from the axilla to the cubital fossa. Scan along the medial and lateral aspect of the forearm from the cubital fossa to the wrists.

Scan all above mentioned arteries along their transverse and longitudinal planes using gray Scale and Colour Doppler imaging. Obtain spectral Doppler waveforms and velocities from all above-mentioned arteries.

While scanning note the presence of plaques, narrowing, occlusion, aneurysm or any lesion and evaluate.

If stenosis is found, measure the velocities from pre, at and post stenotic sites.

In transverse measure the diameter of the Brachial and Radial Artery proximal, mid and distally

Document the location of the brachial artery bifurcation. Measure and document the distance of bifurcation from the antecubital fossa. (10% of pts can have a high brachial artery bifurcation)

Measure the B.P. from both arms using the appropriate size B.P. Cuff.

Check patency of the Palmar Arch: Identify the Radial A at the wrist and/or at the dorsum of the hand (posteriorly between the bases of the first and second metacarpals). The Radial Artery is compressed proximal to this site to occlude flow during insonation. Reversal of blood flow distal to the proximal occlusion confirms patency of the palmar arch,

Repeat the same on the other side.

Venous Examination

The following veins are to be examined:

- Internal Jugular Vein (IJV)
- Brachio-cephalic Vein
- Subclavian Vein above the clavicle
- Subclavian Vein below the clavicle
- Axillary Vein
- Brachial Veins
- Radial Veins
- Ulnar Veins
- Basilic Vein in the upper arm, cubital fossa, and forearm
- Cephalic Vein in the upper arm, cubital fossa and forearm

Begin scanning along the anterolateral aspect of the neck from just below the angle of the mandible to the root of the neck. With grayscale imaging check the IVJ for any intra-luminal echoes and assess for its compressibility. With Colour and Spectral Doppler imaging, scan the IVJ for spontaneity and phasicity. Scan the IVJ up to its junction with the subclavian vein.

With grayscale imaging scan in transverse and longitudinal planes and check for any intraluminal echoes. Compression should be used where possible. Scan with Colour and Spectral Doppler for the spontaneity, phasicity, and pulsatility of all vessels.

Scan the Brachio-cephalic vein and Subclavian vein, above and below the clavicle.

Now slightly abduct and externally rotate the patient's arm and scan from the Axilla to the cubital fossa.

Scan the entire length of the Basilic Vein. In transverse measure the diameter of the proximal, mid and distal arm. Comment on where the Basilic Vein joins the Brachial Vein.
Determine whether the median Cubital Vein connects to both the Cephalic and Basilic Veins
Describe in detail anomalous vessels, large branches or collateral veins.

Scan the entire length of the Cephalic Vein. In transverse measure the diameter of the proximal, mid, distal arm and proximal, mid, and distal forearm. If the vein measures <2.5 mm, apply a tourniquet above the elbow and obtain a diameter measurement.

Measure the depth (skin to anterior wall) proximal, mid, and distal upper arm for any site where the Cephalic vein is deeper than 5 mm.

Scan over the wrist and dorsum of the hand for compressibility of superficial veins if indicated.

Scan the Radial veins and Ulnar veins for compressibility (Documentation of blood flow in the Radial and Ulnar Veins is difficult and may be limited to the patients with special indications or requests)

Repeat the same on the other side
If a unilateral exam is requested, check the contralateral subclavian vein also. Record the

pertinent portion of the exam in PACS.

Scan medical history sheet into PACS.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Iliac Doppler US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE Saint Michael's Hospital Kidney Transplant Program	EFFECTIVE DATE October 2020

Iliac Doppler Ultrasound

Preparation:

Nothing to eat or drink for 8 hours prior to your appointment (except to swallow necessary medication).

Indications:

Work up for potential renal transplant candidates in determining transplant suitability. The degree of iliac artery stenosis will determine whether the renal allograft will be adequately perfused after the anastomosis with the donor renal artery.

Equipment:

Studies should be conducted with a real-time scanner, using a curved 5-2 MHz transducer or linear 7-4 MHz Image quality should be optimized while keeping total Ultrasound exposure as low as reasonably achievable. (ALARA principle)

Technique:

The patient should lie prone on the stretcher.

Imaging and assessment of the following vessels should be performed in sagittal and transverse views.

- Aorta
- Common iliac vein and artery
- External iliac vein and artery
- Internal iliac vein and artery

Evaluate using greyscale, colour flow and doppler. For each arterial vessel documentation must include:

- Largest AP diameter of the vessel
- Presence of aneurysm
- Presence of wall calcification or plaque
- Presence of flow (monophasic, biphasic, triphasic)
- Evidence of stenosis with location and an estimate of how severe (i.e. 50% occluded)

For each venous vessel documentation must include:

- AP diameter of vessel
- Presence of clot

X-Ray Associates Inc. POLICY AND PROCEDURE **Medical Directives**	PROCEDURE **Limited Abdomen US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE July 8, 2010

Medical Directive: Perform a Limited Abdomen Exam

Background: A limited abdominal exam performed in conjunction with a complete pelvic ultrasound provides valuable diagnostic information. It is within the scope of practice of the sonographer, and this facility, to proceed with the necessary associated exams when an abnormality is found. We believe that this is in the best care of the patient.

Directive To: Ultrasound Technologists

Clinical Conditions Required: A limited abdomen exam should be completed following a pelvic scan when, in the sonographer's opinion, the examination is considered appropriate and or necessary.
For: Hydronephrosis of the kidney, distal kidney ureter stones, bladder tumor or uterine fibroids.

If a limited Abdomen has been added, the sonographer MUST record clinical history on the tech worksheet why it was added and ***add to the billings.***

Additional Conditions Required: Patient Consent is not required as this scan is an extension of the pelvic exam order and is deemed within the scope of practice of the sonographer.

X-Ray Associates Inc. POLICY AND PROCEDURE **Medical Directives**	PROCEDURE **Limited Pelvic US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE July 8, 2010

Medical Directive: Perform Limited Pelvic Ultrasound Exam

Background: A limited pelvic exam performed in conjunction with an abdominal ultrasound provides valuable diagnostic information. It is within the scope of the practice of the sonographer, and this facility, to proceed when necessary to perform a limited pelvic ultrasound. This is in the interest of patient care.

Directive to: To all Registered Ultrasonographers.

Limited Pelvis Inclusions:

A limited pelvis should be performed in conjunction with an abdominal scan, when in the Sonographer's opinion to address the patient complaint i.e. lower pelvic pain, renal pathologies, bloating or hematuria or if required to answer the questions raised when scanning the abdomen. Indications include: further evaluating free fluid, thickened bowel loops, pain RLQ, ureter pathology and pelvic kidney.

Limited pelvis exclusions:

When clinical histories only pertain to the upper abdomen, i.e. epigastric or RUQ pain. On follow up abdominal examinations that are specific to a previous abnormal finding (i.e., hepatic lesion, kidney abnormalities), a limited pelvis is not required.

*** FOR ALL abdomens, including those listed in exclusions, the sonographer should always scan the Right and Left Lower Quadrant (Iliac Veins) to look for free fluid and incidental findings and MUST record these 2 images. If NORMAL, DO NOT add a limited pelvis.

If a limited Pelvis has been added, the sonographer MUST record clinical history on the tech worksheet why it was added and ***add to the billings.***

Additional Conditions Required: *Patient Consent is not required as this scan is an extension of the abdomen* order and is deemed within the scope of practice of the sonographer.

X-Ray Associates Inc. POLICY AND PROCEDURE **Medical Directives**	PROCEDURE **Transvaginal US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CPSO-Delegation of Controlled Acts-February 2007	EFFECTIVE DATE April 23, 2014

Medical Directive: The Radiologists of X-ray Associates have delegated transvaginal scanning to the sonographers. The technologists for X-Ray Associated have the skills and knowledge to perform this procedure and have been approved by the Quality Advisor.

Background: In most cases, transvaginal sonography will be used to supplement the transabdominal examination as necessary in order to establish a more accurate diagnosis. When requested by the referring physician, a transvaginal study may be the sole examination performed.

Directive To: Registered Ultrasound Technologists

Clinical Conditions Required: Indications for transvaginal ultrasound examination of the pelvis include the following:

1) All patients referred for vaginal bleeding – both pre and post-menopausal
2) Ovaries: Enlarged, possible/recurrent ovarian cancer, ovarian torsion, polycystic ovarian disease or cysts
3) Any early pregnancy where fetal cardiac activity is not observed
4) All suspected ectopic pregnancies i.e. positive Beta/pregnancy test and no viable intrauterine pregnancy is seen
5) Any pelvic mass, including fibroids
6) Retained products of conception
7) Polyps
8) Assessment of infertility Assessment of bicornuate or subseptate uterus, hydrosalpinx
9) When a nondiagnostic transabdominal scan is obtained due to body habitus, inability to fill and/or bowel gas.

Contraindications:

1) No Patient Consent.
2) The patient has virginal status.
3) If the patient is under 18 years of age, consult a radiologist before proceeding.
4) Recent postpartum or hysterectomy and patient discomfort with the introduction of the transvaginal transducer, consult a radiologist before proceeding.
5) Known premature rupture of membranes.
6) Bleeding associated with known placenta previa.

Procedure:

The procedure will be explained to the patient and consent must be obtained verbally or written from the patient. The vaginal transducer may be introduced by the patient, sonographer, or the radiologist. With an empty urinary bladder, complete the transvaginal ultrasound examination using the same criteria as the transabdominal examination. Probe covers must be used to shield the transducer probe. Apply sterile lubricating gel to the probe cover to help ensure patient comfort. Upon completion of the exam, remove the probe cover and wipe, then soak the probe in HLD (PreEmpt). See policy and procedure for disinfection of probes.

Obtaining a Verbal consent:

Make sure the patient is or has been sexually active.

The following must be part of obtaining verbal consent:

1) This would be the probe that we are using (show the patient)
2) Only the tip will be inserted into the vaginal canal
3) It is covered with a NON-LATEX sterile cover
4) It will have lubricant on the end, so it will feel cool on insertion
5) It will not hurt, if you are experiencing any pain let me know
6) The technologist may insert the probe, or the patient may

ASK the question, "May I proceed??"

They must say **YES** for you to proceed.

Documentation:

- **You MUST check 2 boxes (endovaginal scan/consent obtained) *and***

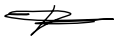
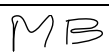
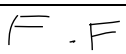
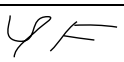
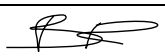
You MUST initial below as this verifies that you have obtained consent based on the above criteria.

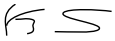
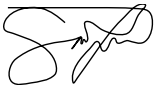
X-RAY ASSOCIATES

Sonographers performing Transvaginal Ultrasounds must be registered CMRITO sonographers with the skill and knowledge to perform TV ultrasounds. They also understand the contraindications as outlined by X-Ray Associates. The delegated TV policy, educational PowerPoint is reviewed yearly and DMS's must complete the IPAC Reprocessing Modules. Random Audits are done to ensure compliance. They have been assessed by the quality advisor to ensure they meet all the requirements

As the Quality Advisor, the sonographers listed below meet all the requirements to perform transvaginal exams

Dr. Philip Mok _____

ULTRASONOGRAPHER	SIGNATURE	DATE
Alona Aisenshted		2022-02-11
Maryam Azizi		March 04/2022
Alex Bibik		2022-05-24
Marina Bibik		2022-05-21
Fatemeh Fasihy		2022-03-04
Yun Feng		2022-03-03
Larissa Ghenrihson		2022-02-14
Vicki Goard		2022-02-10
Si Han Lin		2022-02-12
Zahra Lotafazar	Zahra	2022-02-18
Vijay Mehta		2022-02-10
Tatiana O'Connor		2022-03-03
Gedi Qian		2022-03-07
Bana Raoofi		2022-02-11

Vasily Shugaev		2022-02-11
Kianoush Soudmand		2022-03-03
Yulia Ticker		2022-03-03
Azita Tour Savadkouhi		2022/03/07
Sabrina Yang		2022-02-11
Emily Yam		2022-04-20
Mahtab Yaghoub		2023-07-31
Fariba Shahhosseini		2024-03-24
Inez Murillo		2024- 02-21
Sara Lam		May 13, 2024

X-Ray Associates Inc. POLICY AND PROCEDURE **Medical Directives**	PROCEDURE **Translabial/transperineal US**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE CPSO-Delegation of Controlled Acts-February 2007	EFFECTIVE DATE February 2018

Medical Directive: The Radiologists of X-ray Associates have delegated translabial/transperineal scanning to the sonographers. The technologists for X- Ray Associates have the skills and knowledge to perform this procedure and have been approved by the Quality Advisor.

Background: In most cases, translabial/transperineal sonography will be used to supplement the pelvic/OBS examination as necessary in order to establish a more accurate diagnosis.

Directive To: Registered Ultrasound Technologists

Clinical Conditions Required:
Indications for translabial/transperineal ultrasound examination:

- When a TV is indicated and cannot be done
- To evaluate pelvic floor
- For 3rd trimester obstetrical to view cervical length

Contraindication: Patient refuses

Verbal consent: The following must be part of obtaining verbal consent:

- This would be the probe that we are using (show the patient)
- It is covered with a NON LATEX sterile cover
- It will have sterile lubricant on the end, so it will feel cool
- It will not hurt, if you are experiencing any pain let me know

ASK the question, "May I proceed??" They must say **YES** for you to proceed.

Documentation: Indicate on the worksheet that translabial/transperineal has been performed

X-Ray Associates Inc. POLICY AND PROCEDURE **Medical Directives**	PROCEDURE **US Limited Obstetrical Exam Midwives of York Region/OBS physicians**	ISSUING AUTHORITY QA
LAST REVIEW DATE: July 16, 2013, Feb 23, 2016, March 31, 2015, July 3, 2024	REFERENCE	EFFECTIVE DATE July 16, 2013

Medical Directive: Perform Limited Obstetrical Exam Midwives of York Region Patients only.

Background: A limited Obstetrical exam may be performed as requested by an OBS physician and the Midwives of York Region when they require specific clinical information on a patient such as:

- Fetal Heart
- Fetal Position
- Amniotic Fluid Volume
- Hemorrhage/Placenta Abruption

A Fetal Heartbeat should be recorded and the area of concern only.
Note: If no intrauterine pregnancy is found, the sonographer must always evaluate the adnexa bilaterally to rule out the possibility of an ectopic pregnancy.

It is within the scope of practice of the sonographer, and this facility, to proceed with the necessary limited exams when a concern is found with a patient in his office. We believe that this is in the best care of the patient.

Directive To: Ultrasound Technologists

Clinical Conditions Required: A limited OB exam can be performed when requested for an urgent specific request by an OBS physician and the Midwives of York Region only, and in the sonographer's opinion the examination is considered appropriate and or necessary.

Additional Required: If after 4 PM or on a weekend, EMERGENCY CASES Protocol should be followed. They may choose to follow-up with a full anatomy scan within the next 24/48 hours after this limited study.

X-RAY ASSOCIATES INC

TRANSVAGINAL ULTRASOUND CONSENT FORM

1. You will be instructed to empty your bladder. The vagina must be empty, no tampon inserted. PLEASE NOTE: The examination can be performed during menstruation, but for patient comfort, it is recommended that the examination not be performed on the first day of menstruation.

2. You should inform the individual performing the procedure (sonographer or radiologist) if there has never been sexual intercourse or if you have any allergies to specific lubricants.

3. The transducer is sterilized after each patient. The transducer is covered with a lubricated condom that is latex-free. The prepared transducer will be inserted by you, the patient. During the procedure, you will feel the manipulation of the transducer inside your vagina. This movement of the transducer is necessary to acquire specific images for your exam.

4. There will be a female chaperone in the room during the exam.

Please feel free to discuss your concerns with the sonographer before, during or after the examination.

I HEREBY CERTIFY THAT I HAVE READ AND UNDERSTOOD THE ABOVE AND I AUTHORIZE THE SONOGRAPHER TO PERFORM THIS/THESE PROCEDURE(S).

Procedure Dates:_____

Name of Patient:_____

Date:_____

Signature of Patient: _____

Witness: _____

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Ultrasound electronic worksheets**	ISSUING AUTHORITY QA
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE January, 2022

1) Choose the correct electronic worksheet from Velox to match the exam ordered. (i.e. BPP, Third-trimester OBS)
2) Fill out ALL areas of the worksheet. Checkboxes and dropdowns where required.
3) All previous measurements need to be followed on your worksheets as well.
4) IF you DO NOT have enough space, the comment box at the bottom of all worksheets can be utilized.
5) Answering the clinical question is a MUST! Also, if it is normal. i.e. R/O stones if normal: record NO stones seen, do not just measure kidneys and comment on bladder.
6) You must expand on your description of the findings. If recording echogenic lesions in the liver you MUST comment on location, consistency, size and possible differentials i.e.? hemangioma
7) If your US exam cannot be reported because it is lacking information on the worksheet, you will be contacted. If you are not working the next day, you will be contacted by Vicki and will be expected to complete it so that the exam can be reported. (with 24 hours)
8) If you have added a test i.e. TV, limited abdomen or pelvis, you must change the billing and you must record on the worksheet what and why the exam was added.
9) Double-check your measurements that what is in the ultrasound unit is what you have recorded on your worksheet.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **INFECTION CONTROL** **Hand washing/PPE**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE January 2016

General Hand Hygiene:

- Keep nails short
- Remove all jewelry
- Do not use artificial nails
- Make sure sleeves are rolled up and do not get wet during washing
-

When should you wash your hands?

- BEFORE and AFTER patient exam
- Before eating food
- After using the washroom
- After blowing nose, coughing or sneezing
- After touching garbage
- After removing gloves

****** WHEN IN DOUBT WASH YOUR HANDS OR USE ABHR**
ALCOHOL-BASED HAND RUB (ABHR) with 70- 90% alcohol
(check expiry date)

ABHR is the first choice for hand hygiene when hands are not visibly soiled. ABHR is less time consuming to use than washing with soap and water and is the most time-effective protocol for routine patient care.

ABHR is the preferred method for decontaminating hands when hands are not visibly soiled. Using ABHR is more effective than washing hands (even with an antibacterial soap) when hands are not visibly soiled.

TECHNIQUE FOR USING ABHR:

The following procedure should be used for cleaning hands with ABHR:

- Ensure hands are visibly clean (if soiled, follow hand washing steps) and dry.
- Apply one pump of product onto one palm; the volume should be such that 15 seconds of rubbing is required for drying.
- Spread the product over all surfaces of hands, concentrating on fingertips, between fingers, the back of hands, and the base of thumbs; these are the most commonly missed areas.
- Continue rubbing hands until the product is dry. This will take a minimum of 15 seconds if sufficient product is used. Hands must be fully dry before touching the patient, the environment, or equipment for the ABHR to be effective.

The physical actions of scrubbing with soap and water and rinsing are important for effective removal of material from the hands. It has been shown that at least 15 seconds of lathering with soap is required to remove transient flora.

TECHNIQUE FOR HAND WASHING

The following procedure should be used for hand washing:

- Wet hands with warm (not hot or cold) water; hot or cold water is hard on the hands, and will lead to dryness.
- Apply liquid or foam soap.
- Vigorously lather all surfaces of hands for a minimum of 15 seconds. Pay particular attention to fingertips, between fingers, the backs of hands and the base of the thumbs; these are the most commonly missed areas.
- Using a rubbing motion, thoroughly rinse soap from hands; residual soap can lead to dryness and cracking of skin.
- Dry hands thoroughly by blotting hands gently with a paper towel; rubbing vigorously with paper towels can damage the skin.
- Turn off taps with a paper towel, to avoid recontamination of the hands

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:

- Perform Hand Hygiene
- Put on gown
- Put on Mask
- Put on eye protection
- Put on gloves

Sequence for Removal of PPE:

- Remove gloves
- Remove gown
- Perform hand hygiene
- Remove eye protection
- Remove mask
- Perform hand hygiene

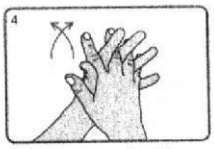
NHS

Alcohol handrub hand hygiene technique – for visibly clean hands

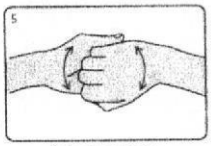
Apply a small amount (about 3 ml) of the product in a cupped hand

Rub hands together palm to palm, spreading the handrub over the hands

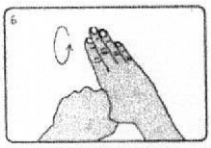
Rub back of each hand with palm of other hand with fingers interlaced



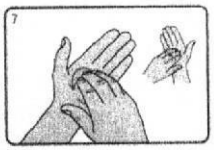
Rub palm to palm with fingers interlaced



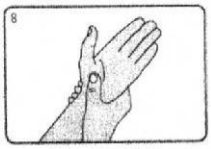
Rub back of fingers to opposing palms with fingers interlocked



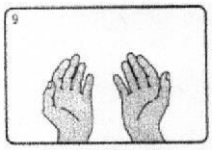
Rub each thumb clasped in opposite hand using a rotational movement



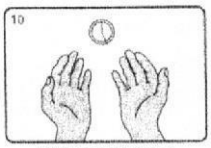
Rub tips of fingers in opposite palm in a circular motion



Rub each wrist with opposite hand



Wait until product has evaporated and hands are dry (do not use paper towels)



The process should take 15–30 seconds

cleanyourhands campaign

NHS
National Patient Safety Agency

Adapted from World Health Organization Guidelines on Hand Hygiene in Health Care

How to handwash

Lather hands for 15 seconds

Wet hands with warm water.

Apply soap.

Lather soap and rub hands palm to palm.

Rub in between and around fingers.

Lather hands for 15 seconds

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.

Rinse thoroughly under running water.

Pat hands dry with paper towel.

Turn off water using paper towel.

Your hands are now safe.

JUST CLEAN YOUR HANDS

Catalogue No. 011875 13M March 2009 © Queen's Printer for Ontario

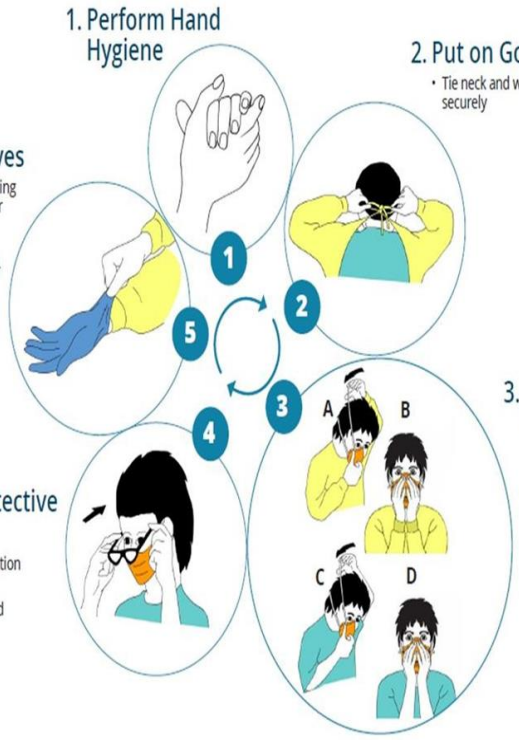
For more information, please contact handhygiene@oahpp.ca or visit publichealthontario.ca/JCYH

Ontario

Recommended Steps:

Putting On Personal Protective Equipment (PPE)

Public Health Ontario | Santé publique Ontario



For more information, please contact Public Health Ontario's Infection Prevention and Control Department at ipac@oahpp.ca or visit www.publichealthontario.ca.

Ontario

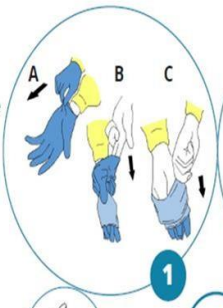
Recommended Steps:

Taking Off Personal Protective Equipment (PPE)

Public Health Ontario | Santé publique Ontario

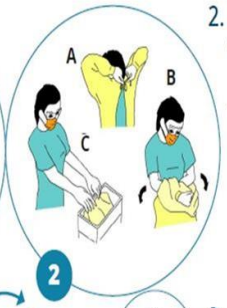
1. Remove Gloves

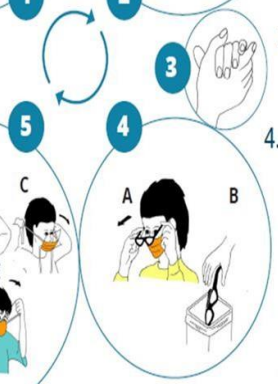
- Remove gloves using a glove-to-glove / skin-to-skin technique
- Grasp outside edge near the wrist and peel away, rolling the glove inside-out
- Reach under the second glove and peel away
- Discard immediately into waste receptacle



2. Remove Gown

- Remove gown in a manner that prevents contamination of clothing or skin
- Starting with waist ties, then neck ties, pull the gown forward from the neck ties and roll it so that the contaminated outside of the gown is to the inside. Roll off the arms into a bundle, then discarded immediately in a manner that minimizes air disturbance.





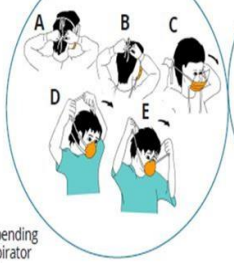
3. Perform Hand Hygiene

4. Remove Eye Protection

- Arms of goggles and headband of face shields are considered to be 'clean' and may be touched with the hands
- The front of goggles/face shield is considered to be contaminated
- Remove eye protection by handling ear loops, sides or back only
- Discard into waste receptacle or into appropriate container to be sent for reprocessing
- Personally-owned eyewear may be cleaned by the individual after each use

5. Remove Mask/ N95 Respirator

- Ties/ear loops/straps are considered 'clean' and may be touched with hands
- The front of the mask/ respirator is considered to be contaminated
- Untie bottom tie then top tie, or grasp straps or ear loops
- Pull forward off the head, bending forward to allow mask/respirator to fall away from the face
- Discard immediately into waste receptacle



6. Perform Hand Hygiene

This is an excerpt from Routine Practices and Additional Precautions In All Health Care Settings (Appendix L) and was reformatted for ease of use.

Ontario

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **INFECTION CONTROL** **Ultrasound Gel**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE: August 2017	REFERENCE Health Canada and CSDMS Guidelines	EFFECTIVE DATE March 2015

Policy on Sterile Gels:

- Should be used for all invasive procedures that pass a device through tissue, (needle aspiration, localization and tissue biopsy) for all procedures involving sterile environment or non-intact skin and or neonates.
- Sterile gels should be used for procedures performed on intact mucous membranes, (esophageal, gastric, rectal, vaginal) and in patients with immunodeficiencies or on immunosuppressive therapy.

Procedure: Use aseptic technique when using sterile gels. Single use packages should be used and then discarded after use.

Policy on Non-Sterile Gels:

- Single use containers should be used. (non-refillable bottles.)

Procedure:

- When opening a new gel bottle date and discard unused gel after one month.
- Tips of bottles should not come in contact with a patient, staff, instruments or the environment, if it does it must be discarded after that patient use.
- The tip should be wiped with alcohol swab between patients.
- If a gel is being used on a patient who is in droplet or contact isolation, use a single use gel package and discard after use.

Warming of Gel:

- Gel Warmers are NOT permitted.

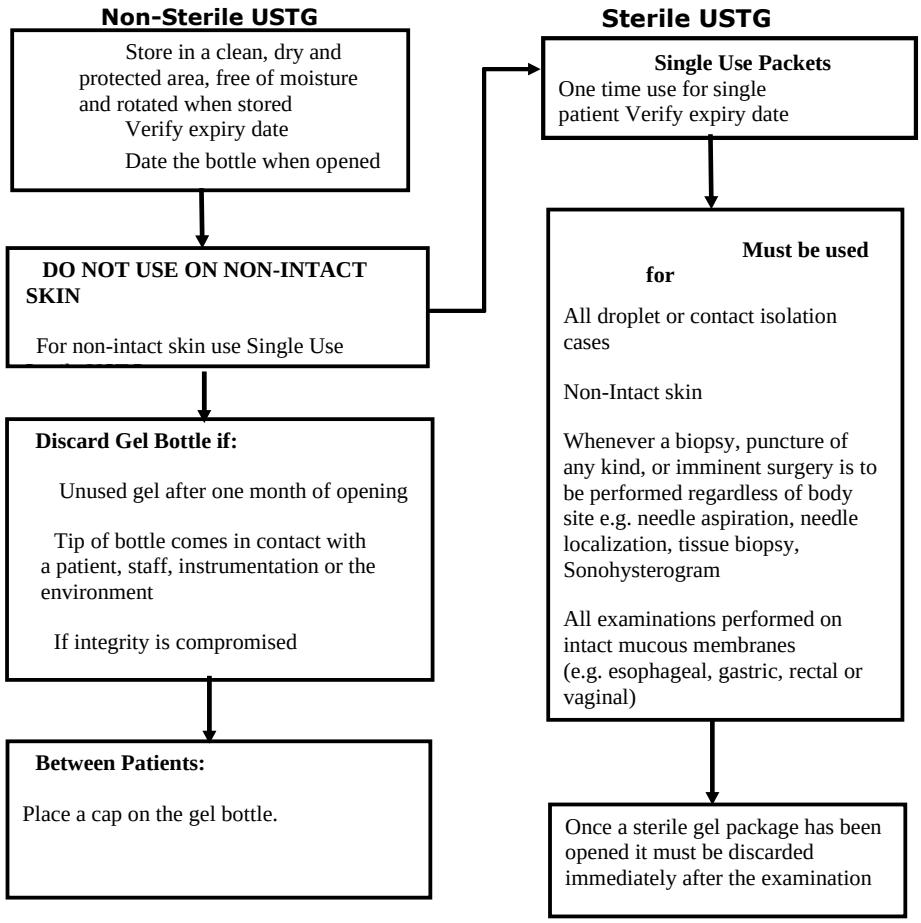
Storage:

- Store in a dry area free from sources of contamination, moisture, insects, rodents, etc.
- If the package /bottle is damaged it should be discarded.
- Rotate products when restocking for best practice date use.

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."



X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **INFECTION CONTROL** **TV Probe Reprocessing**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE: June 2024, July 2024	REFERENCE Public Health Canada PIDAC CPSO guidelines Manufacturer guidelines	EFFECTIVE DATE January 2016

Reprocessing:
Updates to be made if notification from PHO regarding change to PIDAC. IPAC Core and IPAC Reprocessing will be done upon hire and if there is a change in the courses. Competency: Annual sign off on protocols and PPP on reprocessing AND live observation of reprocessing.

TV PROBE:

Sonographers will wear gloves when using the transvaginal probe. Non-latex probe covers will be used on all transvaginal probes.

Sterile gel should be used to lubricate the exterior of the probe covers.

Sonographers will do a risk assessment to decide if gloves, goggles and protective eyewear are required. An eyewash station must be available as per IPAC clinical office practice parameters. PREempt SDS is in the WHIMIS binder.

Preparation and Cleaning

- Transducer covers should be removed via inside out technique, using gloves and disposed of immediately. Care must be taken not to contaminate the transducer with the patient's secretions.
- The gel should be wiped off the transducer and cable with a single-use soft, dry wipe and cleaned with an LLD, PREvention/PREempt wipe.
- The transducer is disconnected from the machine and taken to the reprocessing area in a covered container.
- Avoid cross-contamination within the transducer reprocessing room; keep flow one way, from dirty to clean.
- High-level disinfection (PREempt) is kept in the GUS system and the solution should not pass the connector (probe to cord junction) or touch the bottom of the container, once the probe is placed inside.
- Perform hand hygiene.
- The container must be cleaned with an LLD after use and returned to the ultrasound room for the next transportation of a dirty probe.
- Perform hand hygiene.

PREempt requires 5 minutes of soaking time.

- Perform hand hygiene and remove the transducer from the high-level disinfection container and thoroughly rinse with running water. Do not allow any solutions to air dry on the transducer. Dry with microfiber cloth. (washable)
- Place clean one-time use, plastic Uline sheath cover over the probe and return the transducer to its machine, indicating it has been reprocessed.
- The transducer has a unique identifier and has a "HIGH LEVEL DISINFECTION" label placed on it.
- After high-level disinfection of the transducer, the sonographer must document the reprocessing procedure with:
    - Date
    - Record the patient's unique identifier
    - Select a probe from the list
    - Record soaking time: IN and OUT
    - the name/initial of the person who cleaned the transducer.
- All high-level disinfection solutions must be tested on a daily basis using test strips. When a test strip bottle is opened, record the OPEN DATE and EXPIRY DATE on the test strip bottle. Once the test strip bottle is opened it has an expiry of 6 Months, not past the manufacturer's expiry date. Record the lot # on the record log sheet.
- All high-level disinfection solutions must record the daily temperature of the surrounding area. The thermometer is located in the reprocessing area.
- Upon test strip failure or 2 weeks after solution change, the GUS containers are washed with warm, soapy water and DRIED completely before adding the new solution. Before changing at the 2-week mark, perform a test strip test and record. If the test strip fails proceed as protocol of test strip failure. If it passes, record it on the sheet and proceed with the change. Sonographers will perform a risk assessment to decide on PPE when changing the solution. A test strip must be performed immediately after the change. The newly opened PREempt Jug must be marked with an OPEN DATE and EXPIRY DATE. Once the jug is opened it has a 3 months expiry not past the manufacturer's expiry date.
- Record temperature daily: Should be at room temperature between 59ºF and 86ºF (15ºC–30ºC).
- There is a log to record all high-level disinfection solution changes.
- All documentation must be maintained on-site for 6 years.
- PREempt does not require venting or neutralizing.
- Endocavity transducers should be examined once removed from PREempt solution for any damage, if damage is evident, discontinue the use of the transducer and contact the Lead Sonographer.
- A review and update of the reprocessing techniques should be done on an annual basis. Sonographers must sign off on the policy annually.
- **Do not** use any alcohol, or bleach on the transducers.
- All other transducers and cords should be wiped clean of gel with a dry wipe and then an LLD disinfecting wipe (PREvention/PREempt) after each examination.

Hand hygiene must be performed before handling the disinfected transducer to dry the unit and replace it back into the holder.**Hand hygiene cannot be performed in a reprocessing sink.

The educational PPP will be reviewed annually and approved by Quality Advisor
Mandatory Annual Review and signed off by ALL sonographers
The Lead Sonographer will perform random Audits of Live TV exams and

Reprocessing. Lead Sonographer, GM will convey any manufacturer updates as

they occur

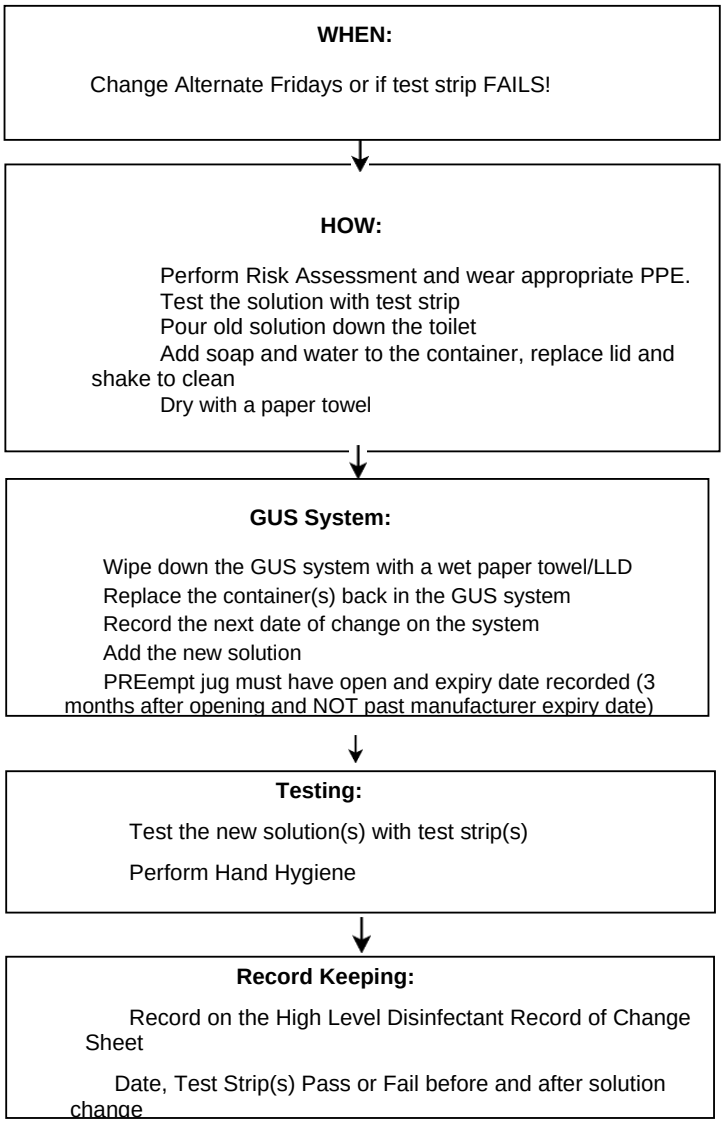
TEST STRIP FAILURE:

- If the Test strip test fails on a daily testing, repeat the test strip test, IF it still fails open another bottle and try again. If it passes, discard previous test strips.

If it still fails, change the solution immediately and notify Lead Sonographer ASAP or GM if not available.

- Make copies of the previous daily log
- Record which cylinder failed, if more than one is in use
- The Lead Sonographer, along with GM will call CPSO, PHO (Public Health Ontario) to decide if there is a risk to patients and decide the next step

Flow Chart HLD PREempt Solution Change



Documentation of Reprocessing

Record the following:

Patient's ID number
Transducer Identifier
Soaking Time, Date
Name of the Person who cleaned the transducer

Testing of HLD: Record the following:

Test strips specific to the HLD be done *daily* before use (record lot #)
Test strip testing must be done before after solution change

HLD solution change: Change either at

Manufacturer's time: every 2 weeks
Fails test strip testing

Solution can be discarded down the sink (as per manufacture's instruction)

Record Keeping:

All written documentation must be maintained on site for 6 years

To Ensure Compliance:

The written policy and procedure on reprocessing techniques be reviewed and updated annually by all staff.

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **INFECTION CONTROL** **Enzymatic Pre Cleaning Solution use**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE:	REFERENCE	EFFECTIVE DATE February 2018

VITAL CARE: Is an enzymatic pre-cleaner for probes. It can be used as a cleaner before the use of PREempt for High Level Disinfecting.

Indications:

- Known communicable disease i.e. Hepatitis C
- After use on open wounds, Herpes, Shingles
- Excessive bleeding

Procedure:
**** This is a precleaning and does not replace HLD! IF any of the above occurs, use enzymatic cleaner followed by HLD.**

- This is a one-time use only and is discarded after use!
- Remove excess gel and probe cover
- Wipe with a Kleenex followed by an Accel wipe and take to Reprocessing Area
- Pour water to the first line of the Civco container, add Enzymatic solution to the second fill line
- Make sure it does not go past the probe/cord junction. (discard extra solution if necessary)
- Soak for 1 minute (use timer or clock)
- Remove from container, rinse well with water
- Dry thoroughly with lint free cloth and place in HLD
- Discard solution, rinse container with soap and water
- See HLD for next steps and recording

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **INFECTION CONTROL** **Test Strip Audit**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE: June 2024	REFERENCE	EFFECTIVE DATE November 2020

Purpose: To confirm the efficacy of test strips at opening
Audit to be performed immediately after new container of test strips is opened.
Procedure:
• 2 cups are 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) – uniformly blue/purple
• The diluted PreEmpt solution should produce a negative control strip (bad) – pink/yellow or incomplete blue/purple

IF SO:
• Record new lot # and results on the daily reprocessing sheet for reference.

IF the desired results DO NOT occur, throw out the test strips and open a new bottle and repeat unless it does pass.

X-RAY ASSOCIATES REPROCESSING SHEET – VAUGHAN

Probe Identifiers: **8** - Philips Affiniti (B3WXQR) **5 –** Philips Affiniti (F057MB)

6 - Philips Affiniti (F05F55) **B** - Toshiba Xario (99A16X2610)

7 - Philips Affiniti (B410NZ) **12** – Philips Affiniti (F0CQ0B)

Loaner _**L** -_____

DATE	TEST STRIP LOT #	PATIENT ID MRN #	**PROBE Identifier**	CONTAINER # (1 or 2)	TIME IN	INITIAL	TIME OUT	INITIAL

X-RAY ASSOCIATES REPROCESSING SHEET – AURORA

Probe Identifiers: **9** - Philips Affiniti (B3WXZX)

10 - Philips Affiniti (B3TJ6G)

11 - Philips Affiniti (F0CMWZ)

Loaner **_L** -_____

D - Toshiba Xario (99B2196486)

E - Toshiba Xario (99B1813699)

DATE	TEST STRIP LOT #	PATIENT ID MRN #	PROBE Identifier	CONTAINER # (1 or 2)	TIME IN	INITIAL	TIME OUT	INITIAL

X-RAY ASSOCIATES REPROCESSING SHEET – NEWMARKET

Probe Identifiers: **2** - Philips Affiniti (F0BKRW) **C** - Toshiba Xario (99B18X4305)

4 - Philips Affiniti (F057LT)

Loaner - **L** -_____

DATE	TEST STRIP LOT #	PATIENT ID MRN #	PROBE Identifier	CONTAINER # (1 or 2)	TIME IN	INITIAL	TIME OUT	INITIAL

X-RAYASSOCIATES Daily Test Strips

*****REMINDER verify patency upon opening LOT #_____**
Date Opened:_____ Patency Check: PASS_____FAIL_____
***** Record New expiry date on the bottle (not past manufacturer date) (+6 months)**

DATE	TEST STRIP LOT #	DAILY TEMP	CONTAINER #1 **P-**Pass **F-**Fail	CONTAINER #2 **P-**Pass **F-**Fail	SIGNATURE

X-RAY ASSOCIATES
RECORD OF RESERT CHANGES
(Change every 2nd Friday or Failure of Test Strip)

DATE RESERT CHANGED	CONTAINER #1				CONTAINER #2				SIGNATURE
	PASS (Pre solution change)	FAIL (Pre solution change)	PASS (Post solution change)	FAIL (Post solution change)	PASS (Pre solution change)	FAIL (Pre solution change)	PASS (Post solution change)	FAIL (Post solution change)	

ULTRASOUND ROOMS
Rooms shall be cleaned after each patient:
• Wiping the bed with a PREvention-wipe after each exam
• Wipe the plastic pillow cover; replace if torn.
• Wiping the key board/machine with a damp towel or cloth with water only to remove any gel
• Rooms must be clean & tidy

*****ALL patient records should not be in view of another patient**
Machines should be cleaned weekly by:
• Removing the pt's in the Hard Drive making sure to leave 5 days only for reference
• Wiping the screen with a damp towel or cloth with water only
• Wiping the keyboard and machine with a damp towel or cloth with water only, including probes and cables
• Wiping down all the shelves in the room which supplies are stored on to remove dust
• Wiping down the stretcher and behind the stretcher if it has not been pulled out for the cleaning staff to get behind

Each month the filter should be vacuumed and recorded on the log sheet found in each room

ULTRASOUND ROOMS STOCKED:
Rooms should be stocked DAILY with:
• Towels
• Gloves
• Gel bottles marked with date of opening
• Probe covers
• Gel packets for TV
• 2 Table paper rolls
• Blue under pads
• Paper drapes
• Kleenex
• Roll of paper towel
• PREvention wipes
• Purell Hand cleaner

X-RAY ASSOCIATES ULTRASOUND ROOMS
Rooms should be stocked DAILY with:

- Towels
- Gloves
- Gel bottles marked with the date of opening
- Probe covers
- Gel packets for TV
- 2 Table paper rolls
- Blue underpays
- Paper drapes
- Kleenex
- Roll of paper towel
- LLD wipes
- Purell Hand cleaner

PM COMPLETED (by Feb) i.e. Jan 23rd Philips	**RECORD OF FILTER CLEANING FOR MACHINE (MONTHLY)** **Initial & Date** i.e. Jan 23rd VG
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

ULTRASOUND SERVICE PROTOCOL:

It is everyone's responsibility to ensure your unit is working at its maximum capacity for creating the best image possible. Probes must be inspected DAILY, **unit vacuumed monthly**, and image quality reviewed. PMs are done on all units annually. If it hasn't been done, please contact Vicki. A service contract is in place for all units.

Before calling for service, speak with Vicki, or if she is not available, another colleague to verify if service is required. Also, when speaking with service ask if it is possible for you to be guided to correct the issue, rather than service being on site. The more information they have before they come on site, will reduce the downtime. WRITE DOWN ALL ERROR CODES before calling in!

Philips Affiniti 70

**Has limited-service contract: MUST contact Lead Sonographer before placing service call.

CCE: Tel: 905.696.9220 Aldona Wark

New Philips 3-year warranty including probes

PMs Service #: 1 800 567-1080

Site ID with Equipment #

Toshiba Xarios 200

CCE : Tel: 905.696.9220 Aldona Wark

Toshiba has applications available at any time. If you have a question that staff cannot answer, please call or email Vicki.

Technologist Peer Review:

All technologists will have a peer review at least annually. It may include live exam and/or image audits. All copies of audits will be given to the technologist at the time of their annual performance review. If there are any issues found they will be addressed as required, i.e. additional training. These reviews are not punitive…just continual learning.

BORN Curve audits are to be reviewed biannually. NT is included in Peer Review. A guide to performing NT is on the intranet.

They may be done by the Lead or GM.

QC notes are another source of learning. These are initiated by the radiologist reporting your case. The PACS Admin will email you the QC note. Please respond to the QC note in the email. It will be reviewed by the Lead and GM.

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - ABDOMEN		
DMS:	AUDITOR:	
	Patient 1	Patient 2
Patient Identifier (Accession #)		
Exam Date		
Checkmarks to ensure patient identity, DOB, exam and referring physician.		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurment accuracy		
Pathology detected/reproduced - protocol followed		
Images are diagnotic/all anatomy displayed		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments:		
Technologists comments:		

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - OBSTETRICAL		
DMS:	AUDITOR:	
	Patient 1	Patient 2
Patient Identifier (Accession #)		
Exam Date		
Checkmarks to ensure patient identity, DOB, exam and referring physician		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Obtain concent for transvaginal exam		
TV identifier is included on worksheet		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurment accuracy		
Pathology detected/reproduced - protocol followed		
Images are diagnotic/all anatomy displayed		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments:		
Technologists comments:		

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - PELVIC		
DMS:	AUDITOR:	
	Patient 1	Patient 2
Patient Identifier (Accession #)		
Exam Date		
Check marks to ensure patient identity, DOB, exam and referring physician		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Obtain consent for transvaginal exam		
TV identifier is included on worksheet		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurment accuracy		
Pathology detected/reproduced - protocol followed		
Images are diagnostic/all anatomy displayed		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments:		
Technologists comments:		

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - SMALL PARTS		
DMS:	AUDITOR:	
	Patient 1	Patient 2
Patient Identifier (Accession #)		
Exam Date		
Checkmarks to ensure patient identity, DOB, exam and referring physician.		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurment accuracy		
Pathology detected/reproduced - protocol followed		
Images are diagnotic/all anatomy displayed		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments:		
Technologists comments:		

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - VASCULAR		
DMS:	AUDITOR:	
	Patient1	Patient2
Patient Identifier (Accession #)		
Exam Date		
Check marks to ensure patient identity, DOB, exam and referring physician		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Proper Doppler angle/sample volume size used		
Plaque characterized and quantified, marked on report		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurement accuracy		
Pathology detected/reproduced- protocol followed		
Images are diagnostic/all anatomy displayed		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments:		
Technologists comments:		

X-RAY ASSOCIATES ULTRASOUND QUALITY IMAGE AUDIT - NUCHAL TRANSLUCENCY		
DMS:	AUDITOR:	
	Patient 1	Patient 2
Patient Identifier (Accession#)		
Exam Date		
Check marks to ensure patient identity, DOB, exam and referring physician		
Exam Clinically Indicated		
Supplement history on technical worksheet		
Time management		
Correct protocol used		
Correct: -annotation		
-gain control setting		
-magnification		
-focal zone placement		
-measurement accuracy		
Pathology detected - protocol followed		
Images are diagnotic/all anatomy displayed		
41mm-84mm CRL in frame		
NT measurements documented correctly - calipers placed "on to on"		
Nasal bone noted with good		
Technical report is clear and complete		
Signature of DMS is recorded		
Comments		
Technologists comments		

GENERAL ULTRASOUND

LIVE DIAGNOSTIC MEDICAL SONOGRAPHER OBSERVATION FORM

Commented [1]: Change form?

Please complete one form for each examination observed

DMS OBSERVED:	

PATIENT IDENTIFIER:	
PATIENT WRITTEN CONSENT OBTAINED:	

TYPE OF EXAMINATION	

	C	NC	NA
1.8.1 DUTIES AND RESPONSIBILITIES OF DMSs			
Follow facility policy regarding situations where the use of chaperones may be appropriate.	○	○	○
Post appropriate signage to restrict access to the patient exam room. (If not, is there a policy to restrict access?)	○	○	○
Ensure the room is prepared for the procedure specified in the order.	○	○	○
Select and set up the equipment and materials needed for the procedure specified in the order.	○	○	○
Ensure correct patient identification (e.g. confirmation of patient name, date of birth, examination to be performed, and physician/authorized health professional authorization is present).	○	○	○
Confirm that the order is appropriate based on the patient history.	○	○	○
Inquire about and record any contraindications (e.g. latex allergy) before starting the exam.	○	○	○

Ensure that the worklist contains the correct patient information (if applicable).	○	○	○

	C	NC	NA
Obtain informed consent (oral or written as per facility policy) before each examination (after explaining the procedure and answering any questions).	○	○	○
Ensure pertinent clinical history is available, supplement as necessary and record on the technical impression worksheet.	○	○	○
Instruct the patient to remove only the clothing and items that will interfere with the procedure, providing the patient with a gown or sheet to cover areas where clothing was removed and explaining to the patient when and where the DMS may touch them and why.	○	○	○
Follow the facility examination protocols.	○	○	○
Write a technical impression as per site protocol.	○	○	○
Follow facility protocols when unexpected findings are found that would require immediate attention (e.g. appendicitis, ectopic pregnancy).	○	○	○
Allergies to latex must be identified and non-latex transducer covers must be utilized. This information must be recorded on the sonographer's technical impression worksheet.	○	○	○
THROUGHOUT THE EXAMINATION:			
Assess the patient's condition before, during and after the procedure or course of treatment and make modifications to procedures based on the patient's physical, medical and/or emotional status and needs.	○	○	○
Maintain patient comfort, privacy and dignity at all times.	○	○	○
Stop procedure if at any time the patient withdraws consent and record withdrawal of consent and reason as per site protocol.	○	○	○
Use PPE (personal protective equipment masks/gloves/gown etc.) and devices as required for the procedure and as indicated by personal risk assessment.	○	○	○
Ensure that patient examination images and data contain patient name, ID number, date of examination and type of examination and number of images.	○	○	○
Ensure images were scanned as per site protocol and include:			
○ correct annotation	○	○	○
○ fine & total gain controls set correctly	○	○	○
○ appropriate magnification	○	○	○
○ focal zone set correctly	○	○	○

○ proper use of calipers	○	○	○
measurements documented	○	○	○

	C	NC	NA
○ scan correctly annotated	○	○	○
○ scan through the entire organ appropriately	○	○	○
○ the technical worksheet is suitable for regions examined	○	○	○
Ensure the processed image provides diagnostic image quality while minimizing patient exposure to soundwaves (ALARA – As Low As Reasonably Achievable). Take corrective action if necessary and record explanation of sub-optimal imaging.	○	○	○
Ensure that each patient record (including the technical impression worksheet) has the DMS identifier to verify who performed the examination.	○	○	○
Comply with privacy and confidentiality legislation such as the *Personal Health Information Protection Act* (Ontario). Was patient privacy maintained at all times?	○	○	○
TRANSVAGINAL/ENDOCAVITY ULTRASOUNDS: include the criteria above plus:			
Transvaginal/endocavity transducer ID number (individual to each transducer) must be identified on the reprocessing sheet.	○	○	○
Upon exam completion follow Provincial Infectious Diseases Advisory Committee (PIDAC) or manufacturers guidelines for transducer cleaning.	○	○	○
Ensure Internal & External Gel use meets PIDAC guidelines.	○	○	○
IMAGE REVIEW:			
Are there enough images to allow 3rd party interpretation?	○	○	○
Ensure the examination includes interrogation of all relevant anatomy using appropriate transducers and gain settings.	○	○	○

General Comments:

Recommendations:

NUCHAL TRANSLUCENCY

DIAGNOSTIC MEDICAL SONOGRAPHER OBSERVATION FORM

Please complete one form for each examination observed

DMS OBSERVED:	
CMRTO #:	

PATIENT IDENTIFIER:	
PATIENT WRITTEN CONSENT OBTAINED:	

TYPE OF EXAMINATION OBSERVED?	

	C	NC	NA
1.8.1 DUTIES AND RESPONSIBILITIES OF DMSs			
Follow facility policy regarding situations where the use of chaperones may be appropriate.	○	○	○
Post appropriate signage to restrict access to the patient exam room. (If not, is there a policy to restrict access?)	○	○	○
Ensure the room is prepared for the procedure specified in the order.	○	○	○
Select and set up the equipment and materials needed for the procedure specified in the order.	○	○	○
Ensure correct patient identification (e.g. confirmation of patient name, date of birth, examination to be performed, and physician/authorized health professional authorization is present).	○	○	○
Confirm that the order is appropriate based on the patient history.	○	○	○
Inquire about and record any contraindications (e.g. anaphylaxis) before starting the exam.	○	○	○
Ensure that the worklist contains the correct patient information (if applicable).	○	○	○

	C	NC	NA
Obtain informed consent (oral or written as per facility policy) before each examination (after explaining the procedure and answering any questions).	○	○	○
Ensure pertinent clinical history is available, supplement as necessary and record on the technical impression worksheet.	○	○	○
Instruct the patient to remove only the clothing and items that will interfere with the procedure, providing the patient with a gown or sheet to cover areas where clothing was removed and explaining to the patient when and where the DMS may touch them and why.	○	○	○
Follow the facility examination protocols.	○	○	○
Write a technical impression as per site protocol.	○	○	○
Follow facility protocols when unexpected findings are found that would require immediate attention (e.g. abnormal NT, ectopic pregnancy).	○	○	○
Allergies to latex must be identified and non-latex transducer covers must be utilized-this information must be recorded on the sonographer's technical impression worksheet.	○	○	○
THROUGHOUT THE EXAMINATION:			
Assess the patient's condition before, during and after the procedure or course of treatment and make modifications to procedures based on the patient's physical, medical and/or emotional status and needs.	○	○	○
Maintain patient comfort, privacy and dignity at all times.	○	○	○
Stop procedure if at any time the patient withdraws consent and record withdrawal of consent and reason as per site protocol.	○	○	○
Use personal protective equipment (masks/gloves/gown etc.) and devices as required for the procedure and as indicated by personal risk assessment.	○	○	○
Ensure that patient examination images and data contains patient name, ID number, date of examination and type of examination and number of images.	○	○	○
Ensure images were scanned as per site protocol and include:			
○ correct annotation	○	○	○
○ fine & total gain controls set correctly	○	○	○
○ appropriate magnification	○	○	○
○ focal zone set correctly	○	○	○
○ proper use of calipers and appropriately positioned for NT measurement	○	○	○
○ measurements documented	○	○	○

	C	NC	NA
○ scan correctly annotated	○	○	○
○ scan through the entire organ appropriately	○	○	○
○ the technical worksheet is suitable for regions examined	○	○	○
Ensure the processed image provides diagnostic image quality while minimizing patient exposure to soundwaves (ALARA – As Low As Reasonably Achievable). Take corrective action if necessary and record explanation of sub-optimal imaging.	○	○	○
Ensure that each patient record (including the technical impression worksheet) has the DMS identifier to verify who performed the examination	○	○	○
Comply with privacy and confidentiality legislation such as the *Personal Health Information Protection Act* (Ontario). Was patient privacy maintained at all times?	○	○	○
TRANSVAGINAL/ENDOCAVITY ULTRASOUNDS: include the criteria above plus:			
Transvaginal/endocavity transducer ID number (individual to each transducer) must be identified on the on the reprocessing sheet.	○	○	○
Upon exam completion follow Provincial Infectious Diseases Advisory Committee (PIDAC) or manufacturers guidelines for transducer cleaning.	○	○	○
Ensure Internal & External Gel use meets PIDAC guidelines.	○	○	○
IMAGE REVIEW:			
Are there enough images to allow 3rd party interpretation?	○	○	○
Ensure the images are diagnostic (magnification, caliper positioning etc.).	○	○	○

General Observations and Recommendations:

VASCULAR ULTRASOUND

DIAGNOSTIC MEDICAL SONOGRAPHER OBSERVATION FORM

Please complete one form for each examination observed

DMS OBSERVED:	
CMRTO #:	

PATIENT IDENTIFIER:	
PATIENT WRITTEN CONSENT OBTAINED:	

TYPE OF EXAMINATION OBSERVED?	

	C	NC	NA
1.8.1 DUTIES AND RESPONSIBILITIES OF DMSs			
Follow facility policy regarding situations where the use of chaperones may be appropriate.	○	○	○
Post appropriate signage to restrict access to the patient exam room. (If not, is there a policy to restrict access?)	○	○	○
Ensure the room is prepared for the procedure specified in the order.	○	○	○
Select and set up the equipment and materials needed for the procedure specified in the order.	○	○	○
Ensure correct patient identification (e.g. confirmation of patient name, date of birth, examination to be performed, and physician/authorized health professional authorization is present).	○	○	○
Confirm that the order is appropriate based on the patient history.	○	○	○
Inquire about and record any contraindications (e.g. latex allergy) before starting the exam.	○	○	○
Ensure that the worklist contains the correct patient information (if applicable).	○	○	○

	C	NC	NA
Obtain informed consent (oral or written as per facility policy) before each examination (after explaining the procedure and answering any questions).	○	○	○
Ensure pertinent clinical history is available, supplement as necessary and record on the technical impression worksheet.	○	○	○
Instruct the patient to remove only the clothing and items that will interfere with the procedure, providing the patient with a gown or sheet to cover areas where clothing was removed and explaining to the patient when and where the DMS may touch them and why.	○	○	○
Follow the facility examination protocols.	○	○	○
Write a technical impression as per site protocol.	○	○	○
Follow facility protocols when unexpected findings are found that would require immediate attention (e.g. DVT).	○	○	○
Allergies to latex must be identified and non-latex transducer covers must be utilized. This information must be recorded on the sonographer's technical impression worksheet.	○	○	○
THROUGHOUT THE EXAMINATION:			
Assess the patient's condition before, during and after the procedure or course of treatment and make modifications to procedures based on the patient's physical, medical and/or emotional status and needs.	○	○	○
Maintain patient comfort, privacy and dignity at all times.	○	○	○
Stop procedure if at any time the patient withdraws consent and record withdrawal of consent and reason as per site protocol.	○	○	○
Use PPE (personal protective equipment masks/gloves/gown etc.) and devices as required for the procedure and as indicated by personal risk assessment.	○	○	○
Ensure that patient examination images and data contains patient name, ID number, date of examination and type of examination and number of images.	○	○	○
Ensure images were scanned as per site protocol and include:			
○ correct annotation	○	○	○
○ fine & total gain controls set correctly	○	○	○
○ appropriate magnification	○	○	○
○ focal zone set correctly	○	○	○
○ proper use of calipers	○	○	○
○ measurements documented	○	○	○

	C	NC	NA
○ correct angle chosen for doppler measurements (60 degrees)	○	○	○
○ scan correctly annotated	○	○	○
○ scan through the entire organ appropriately	○	○	○
○ the technical worksheet is suitable for regions examined	○	○	○
Ensure the processed image provides diagnostic image quality while minimizing patient exposure to soundwaves (ALARA – As Low As Reasonably Achievable). Take corrective action if necessary and record explanation of sub-optimal imaging.	○	○	○
Ensure that each patient record (including the technical impression worksheet) has the DMS identifier to verify who performed the examination.	○	○	○
Comply with privacy and confidentiality legislation such as the *Personal Health Information Protection Act* (Ontario). Was patient privacy maintained at all times?	○	○	○
Extracranial Cerebrovascular System (Carotid US): Is real-time imaging of the common carotid, internal carotid and proximal external carotid arteries performed so as to accurately assess the morphology and degree of stenosis?	○	○	○
Peripheral Veins (Venous Doppler) - is the common femoral, femoral, proximal greater saphenous, proximal profunda femoris and popliteal veins assessed to determine the presence and location of thrombi? If there is a Thrombus present, is there a mechanism in place to expedite results?	○	○	○
Peripheral Arteries (Arterial Doppler) – is the common femoral, femoral and proximal profunda femoris and popliteal arteries assessed to determine the morphology, location and degree of stenosis?	○	○	○
Is the ankle/brachial ratio (ABI) recordings obtained? If so, is it documented?	○	○	○
Upon exam completion follow Provincial Infectious Diseases Advisory Committee (PIDAC) or manufacturers guidelines for transducer cleaning.	○	○	○
External Gel use meets PIDAC guidelines.	○	○	○
IMAGE REVIEW:			
Are there enough images to allow 3rd party interpretation?	○	○	○
Ensure the examination includes interrogation of all relevant anatomy using appropriate transducers and gain settings.	○	○	○

General Observations and Recommendations:

X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **Logging Interesting Cases in PACS**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE: Nov 2020	REFERENCE	EFFECTIVE DATE October 2015

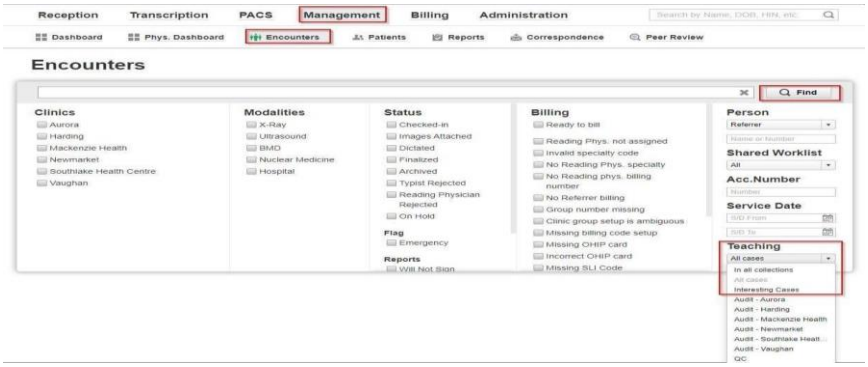
PREAMBLE:
Interesting case folder is available in PACS. Cases can be added in Velox by technologists, PACS Admin and Radiologists. At least one case a year will be shared with staff as selected by the QA committee. We will attempt to have a live presentation annually. ***GE interesting cases have been printed and available at each clinic where all manuals are kept.***

HOW TO ADD STUDIES TO INTERESTING CASES FOLDER

- Go to the encounter click on the  to edit the encounter.
- Click on Interesting cases and then save by clicking on the checkmark.

How to Lookup Interesting Cases in Velox

● Go to Management > Encounter > Find > Teaching >click on Interesting cases and a list of all the interesting cases will appear



X-Ray Associates Inc. POLICY AND PROCEDURE	PROCEDURE **QC Workflow**	ISSUING AUTHORITY General Manager
LAST REVIEW DATE: Nov 2020	REFERENCE	EFFECTIVE DATE November 2015

QC WORKFLOW

Please follow the process for QC notes:

1) PACS Admin will review the QC notes. If the exam has NOT been reported, they will put the exam in the “Reading Physician Rejected” or “Hold” status. This should be addressed ASAP by the individual clinic, ideally, the technologist who performed the exam. If the technologist is not present, and the technologist on duty cannot answer the question, please notify the appropriate contact i.e.GM, Lead.
2) If the question cannot be answered by phone, it is expected that the technologist will return within 24 hours to answer the question so that the exam can be reported.
3) The technologist will not respond in the QC note unless the exam has NOT been reported.
4) PACS Admin will enter “technologist notified” in response to the radiologist's question. He will then print the QC note and email to the technologist in question and to the GM, & Lead.
5) The technologist will review the exam, and respond to the question directly in the email.
6) The response is expected SAME DAY!
7) DO NOT respond to the radiologist unless it has NOT been reported.
8) The response is reviewed by Marlene and the Modality Lead.
9) Please do not be defensive in your responses, they are not meant to be punitive. If we see errors being repeated, we can update all staff. This is for teaching purposes and feedback only.

Velox Quick Sheet –Technologist

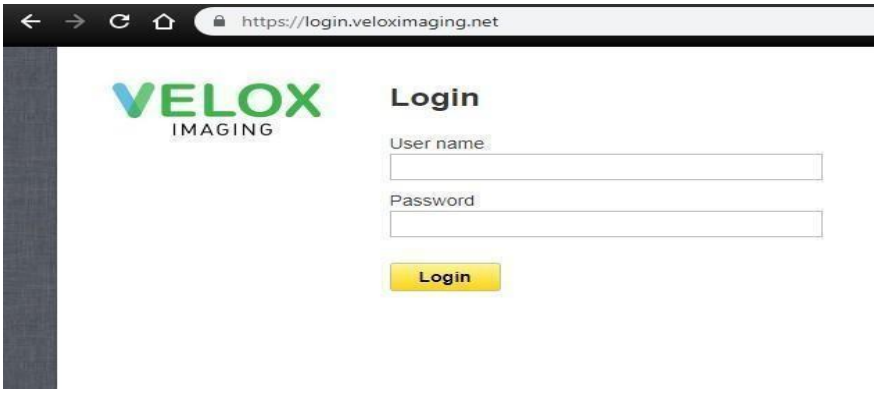
Velox Suite – is a web-based system and is accessed via the interface of the web browser.

Every user is going to have a unique user name and password combination. Xra.First Initial and then last name

To login the application you should launch Velox Suite Application icon on your desktop

After that just put your unique username ID and password and press LOGIN.

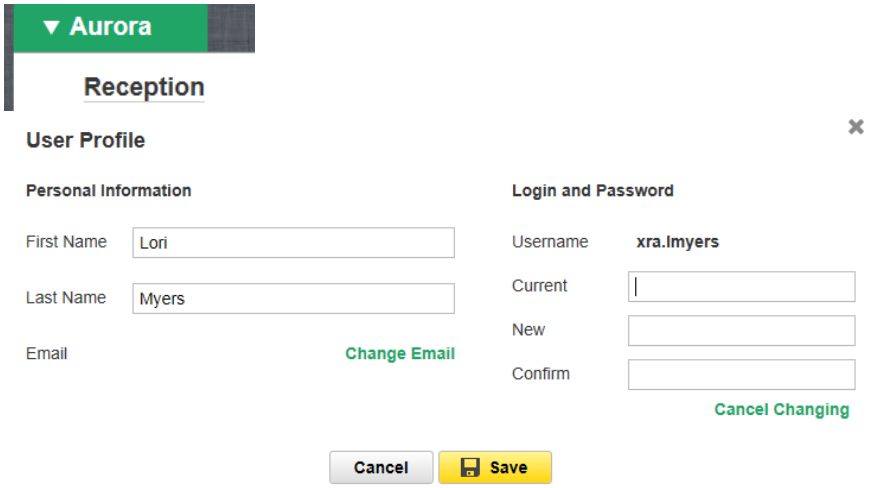
- My Name is Lori Myers;
-
- Username: xra.lmyers



Change Password:

- Top right corner click on your name

- Change Password



- It will ask you for your current password & then a new password
- Save

Navigate between clinics:

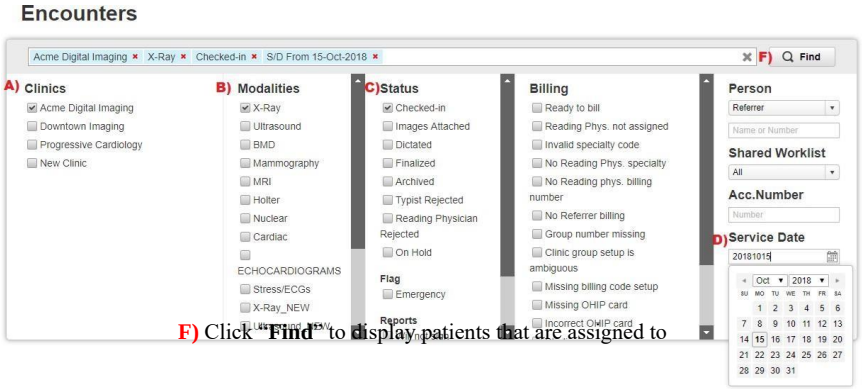
On the top of the screen, you will see the name of the clinic. Before starting work, please make sure that it is the name of your clinic, otherwise you can switch between the clinics using white arrow next to the clinic name.

1) Opening your Worklist

- Click "**Management**" tab, then select "**Encounters**".

- Click the empty filter bar to open search filter.

- **A)** Select your clinic(s) → **B)** Choose modality that you perform **C)** Select Status to "**Checked-in**" → **D)** Choose start date (No end date necessary if current day.)

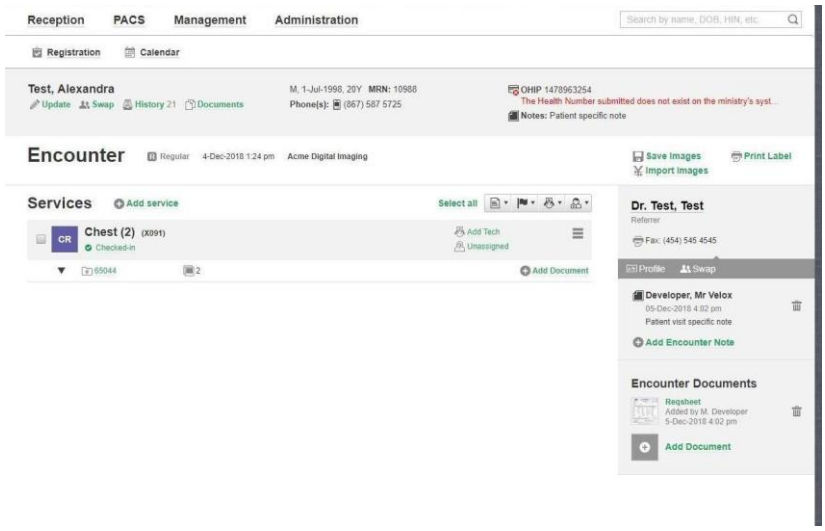


F) Click "**Find**" to display patients that are assigned to

Editing Encounter

- Follow through <**Step 3) Opening your Worklist** >
- Put your mouse cursor over the encounter to click "**Edit Encounter**" button.

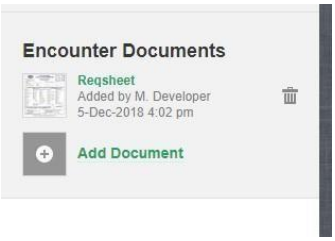
- This is what Encounter page looks like:



- Key areas to look into in order to verify all the information is there:

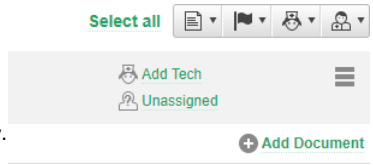
A) Requisition sheet

Make sure the document is scanned/uploaded here. If you are scanning requisition yourself, please click "Add Document" under Encounter Documents to either scan or upload.



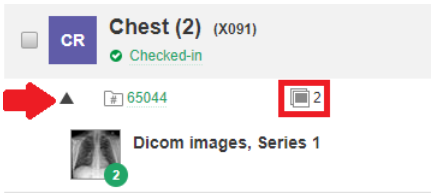
B) Assigning appropriate people to the case

By left clicking on "Add Tech", as well as "Unassigned", you are able to assign yourself as technologist, and assign radiologist who will be reading the case, if they are not assigned already.



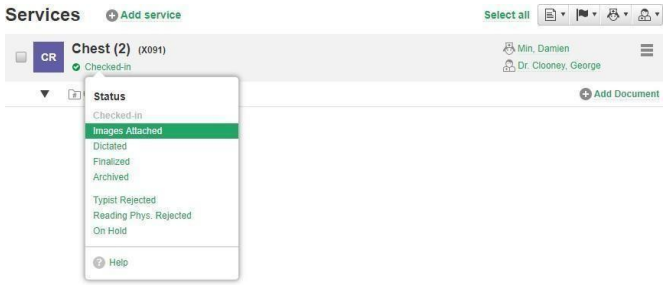
C) Verifying of images

You can verify the number of images by seeing the number next to picture icon, or by left clicking black arrow pointing downward, to expand and see details under encounter.



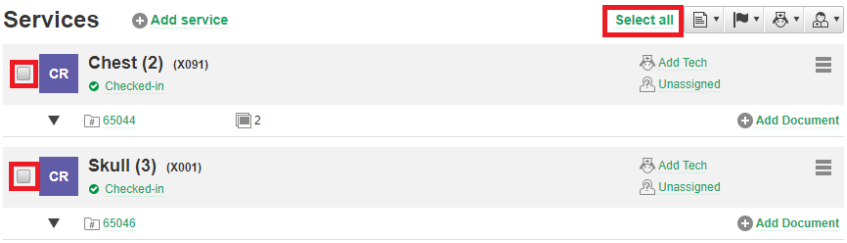
D) Finalizing the case to be read by radiologist

Left click on "Checked-in" status showing below service name, and set them to "Images attached" status, in order to push the case to radiologist's worklist.



- When there are multiple services, there are easier way to assign yourself, as well as setting reading physician & changing the status of the encounter to “Images Attached”.

  a) By clicking “Select all” button, or by individually checking off boxes next to modality code in service, you are able to use Encounter toolbar.



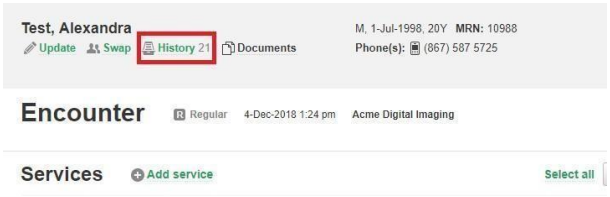
  b) Starting from the order in which you will use this tool bar, each button does the following:

  A – Changing Radiologist
  B – Changing Technologist
  C – Encounter status
  D – Showing reports

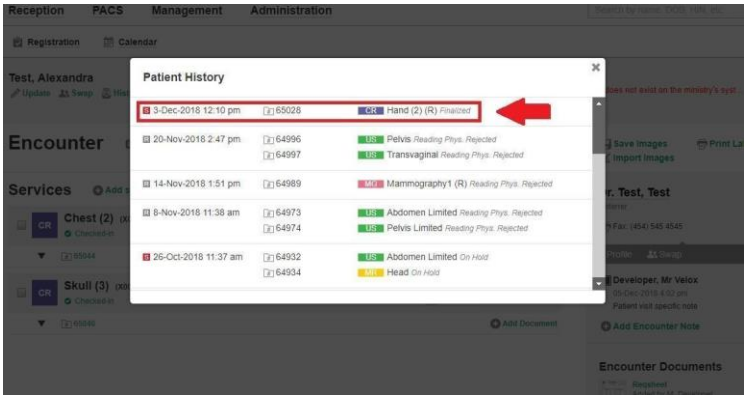
  c) Once you click on the icons on toolbar, you are able to switch the information the same way you would in individual services. This would change all the corresponding information based on what service you have selected.

2) Searching for patient's prior encounter

When you're in patient's encounter, you can simply select "History" within Patient's demography in order to access their prior case.

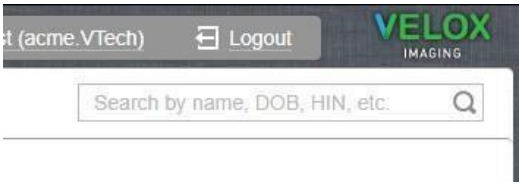


You are able to select any prior you see in the list, and get into the encounter of that visit to view images or reports as you like.



3) Searching for patient's encounter (Using "Quick search bar")

On top right corner of your screen, you will have access to "Quick search bar" any time using Velox RIS.

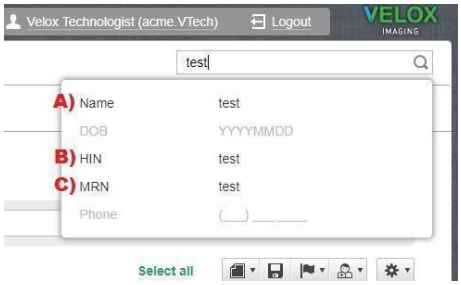


Using this “Quick search bar”, you are able to search patient’s encounters with few information. Mainly, the information you’ll be using are the following:

A) Last name of the patient

B) HIN (Health Insurance Number)

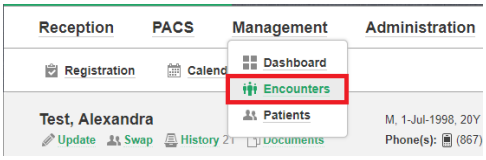
C) MRN (Medical Record Number)



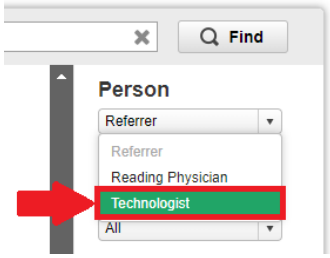
By putting in the information in the search bar, and clarifying what this information is by selecting the options showing below, (left click into correct info) you will search for patient’s information.

5) Searching for patient’s encounter you completed

You can search for encounters that you assign yourself in as technologist, by creating encounter filter under Management, into “Encounters”.



Left click on “Referrer” under Person to change the filter to Technologist.



Xario 200 Tips and Tricks

1. **Ergonomics**
   - The monitor is on a fully articulating arm and moves independently of the console. Use the handle on the front for easiest adjustment.
   - The console moves both up and down (clip on left front) and can swivel side to side (pull peg underneath console)
   - The Xario has individual wheel locks. Press ON to lock wheel. Press OFF to unlock wheel.

2. **New Patient Screen/Work list:**
   - The "little people" button to the left of the touch screen is the NEW PATIENT page.
   - In order to store images, you must enter a patient ID and patient name. If you do not see your patient on the work list, press GET WORKLIST to refresh.
   - Use SET to select your patient from the work list.
   - Choose your exam type from the drop down menu if it does not insert automatically. If you are doing an OB exam, once you have selected OB, you are now able to enter the LMP/EDD on this page.
   - Press START. This will load your imaging presets, annotations, and calc packages.
   - *Note* - If you accidently press the New Patient button in the middle of an exam, it does not end the exam. Press the New Patient button again and continue on with your exam. The exam will only end if you press End Exam on the touch screen, or if you start another patient.
   - To change your transducer: The probe button is directly underneath the NEW PATIENT button. The active transducer has a blue box around it.

3. **Using the Touch Screen**
   - Once an exam is started, on the touch screen you will notice the QUICK START menu. Each Preset has its own QUICK START menu. This is a number of different settings which are optimized for different scanning situations, (ie. if you are scanning a technically challenging abdominal patient, use the "XL" QUICK START setting. The first Quick Start setting will always have square brackets. This is a duplicate of the preset you selected from the NEW PATIENT page. **Important- Always make sure to pick an Endovaginal preset not just select the probe otherwise the orientation will be incorrect and the image parameters will not be optimal

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- THI TYPE: This is Tissue Harmonics. Do not turn off Harmonics on the Xario. The imaging technologies on this ultrasound machine work together; this means that you are not going to lose penetration by keeping harmonics on.
- FULLSCREEN: This takes you in and out of thumbnail view.
- DR: Dynamic range (contrast): lower number gives more contrast, higher number more gray; ideal range somewhere between 55-75 depending on what you are Imag1ng
- SECTOR/SCAN RANGE: to narrow field of view
- Frequency: dial below touch screen on right side

4. Technology
   - ApliPure: Compounding. Sending your soundbeam in multiple different directions. The higher you go, the smoother the image becomes with increased contrast resolution and better margins.
   - Precision: Each scan line is evaluated and compared to adjacent scan lines. Things that are present on multiple scan lines are recognized as structure vs. noise. Precision reduces speckle noise and improves contrast and margins.

5. Using the Console
   - Anything ORANGE on the console means the function is active. To turn off an active function, re-press it. (ie. To activate calipers, press the CALIPER button. To turn off CALIPERS, re-press the button.)
   - Arrow: Brings up a cursor.
   - REPORT: Report page for calcs packages. Used for OB and Carotid calculation packages.
   - VOLUME: short cut for volume measurement. To use: Press VOLUME to bring up your first caliper. Press SET to place the first caliper, and SET to place the second caliper. To bring up your next set of calipers, either move the TRACKBALL or press NEXT.
   - ABCfTEXT: will activate annotations.
     - Where ever the cursor comes up on the screen is the HOME line. To move the home line, press SET HOME on the touch screen.
     - DELETE: deletes the line the cursor is on.
     - DELETE ALL: deletes all the annotations on the image.
     - You can edit portions of your text line (ie. Replace SAG with TRX) by dropping the cursor under the first letter of the word and typing over it.
     - To move the annotations from one part of the image to another: touch the cursor to the text so it becomes yellow, press SET. An orange box will appear around the annotation. Use the trackball to move to the desired location. Press SET to lock into its new place.

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- **NOTE- If you are trying to type over something and it is inserting words instead, press the "INS" button on the keyboard.

- CALC: Activates the calcs packages
- CALIPER: Activates calipers.
  - Use SET to place caliper. To readjust calipers, pressing SET will re--activate them.
  - Drag the trackball, or press NEXT to bring up another set of calipers.
  - DELETE: on the touch screen, deletes the active caliper
  - CALIPER ED IT: brings up a cursor which will allow you to edit any caliper placed on the image.
- SET: Think of SET like your "left mouse click"
- NEXT: Brings up additional calipers; toggles you between functions when in zoom and CDI is activated
- SCROLL WHEEL: Focus in 2D (keep the focus in the centre of whatever you are imaging); adjusts scale when in Color or Pulsed Wave Doppler; adjusts baseline for doppler when frozen
- 2D/ CDVPW/M: knobs control the gain level of their respective function. Pressing CDVPower/PW/M will activate color Doppler/ Power Doppler/Pulsed wave Doppler/ and M Mode.
- UPDATE: updates Doppler tracing; when frozen pressing update allows you to cine back 2D image to get optimal colour image
- QSCAN: Auto optimize. In grayscale: Optimizes your overall and lateral gains. In Pulsed Wave Doppler: Optimizes your baseline and scale. To turn Q Scan off: Press twice quickly.
- LAYOUT/ QUAD: In 2D gives you a quad view (for AFIs) and in PW Doppler, changes the layout of your image and your pulsed wave trace.
- FRZ: Freeze
  - Post-freeze options 20: gain, TGCs, zoom, Dynamic range, map
  - Post-freeze option PW Doppler: layout, PW gain, baseline, angle correct, sweep speed, doppler reverse
  - Post-freeze option CDI: doppler reverse, twin view, cdi map, cdi display on/off
- TWIN VIEW: Split screen mode displaying simultaneously in real--time a B-mode image on the left and a Color or Power image on the right. Great for CBD, renal stones, or vascular masses. Available post freeze as well when in COi
- WIDE VIEW: Trapezoid view for linear probes.
- DEPTH/ZOOM: multifunction dial. Press depth dial down to activate Zoom. Change zoom methods by button on touch screen.
  - SPOT ZOOM: HD/Write zoom. Press depth dial, use SET and trackball to determine zoom box size, re-press depth dial to activate zoom. You can rotate the depth dial to further zoom in or zoom out once in spot zoom.
  - CENTRE ZOOM/: Read zoom. Press depth dial and rotate depth dial clockwise to zoom in.

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6. Cale Packages
   - "Set" Cales or they will not be entered to report; The distance/ellipse measured should be BLUE and the box with the measurement values should be white.
   - You can adjust a Cale by continuing to press Set for both distance & ellipse calcs, just ensure it is Blue when finished.
   - The "Meas/Edit" knob on the console, when pressed, will move an entire ellipse ie. AC or HC.
   - Function of NEXT button in Cales: Use for AF Is or GS. After setting D1, press NEXT, and the Xario will automatically bring up your next measurement for the AFI or GS
   - REPORT: You must store an image of the report page before ending the exam; if you forget, restart the exam, select report and store image

7. Output Buttons
   - STILL STORE: Saves an image to the hard drive
   - CLIPS STORE: Saves a retrospective cine clip. To store a cine clip:
     - FREEZE, UNFREEZE, sweep, CLIPS STORE
     - To review your cine clip before storing it: FREEZE, UNFREEZE, sweep, FREEZE. Spin the outer wheel of the trackball. The Xario will loop through all the frames stored in the clip. To stop the cine loop, touch the trackball.
     - To edit your cine clip before storing: after you freeze, scroll to the desired starting point and press SET. Scroll to desired end point and press SET. Then press CLIPS STORE.
     - To change the length of the clips, go to the PIMS tab on the touch screen and change TIMELENGTH.

8. Options for stored images:
   - While in EXAM REVIEW you can measure and annotate stored images, and zoom using the icon on left of screen with the magnifying glass-then using little wheel, image can be zoomed and using trackball image can be panned.
   - Annotate and Measure - simply press the Caliper or Annotate button and fix the image. Still Store the image as usual, it will be added to the *end* of your case. By selecting "move" on the left side of the screen, you can modify the order of your images.
   - For Annotations, youcanput"XXX"overthe incorrect labeling to cover it up.
   - When finished measuring or annotating, you must turn off whichever of the two buttons are activated to get back to Exam Review.
   - The length of stored Cine Clips can be modified. Define beginning and end on the playback bar and then press Clips Store.
   - Image data deletion is possible by marking images (trashcan icon), then press delete (trashcan icon) to delete all marked images.

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9. **Sending Images/Patient Browser/Restarting a case**
   - To verify whether images have been sent, you can check the JOB STATUS in Patient browser. Images that have been sent will say COMPLETED.
   - **NOTE: If the server is down or images have failed to go across you can send manually by selecting patient from patient browser, go to COPY and set- a pop up box will appear, then set again to send
   - You can restart a case within 24 hrs (for OB must be same day) by going into patient browser, selecting patient, then RESTART (mid page) and confirm. This will load all the patient data and images and keep all in one file.

10. **Ending An Exam**
   - To end a study, press the NEW PATIENT button, then press END EXAM on the touch screen.
   - This will end the active study and will refresh the worklist.

11. **Deleting Exams off the Hard Drive in Patient Browser:**
   - This should be done once the hard drive free space gets below 130GB. The free space remaining can be found on the top right of the monitor.
   - Go to PATIENT BROWSER
   - Use trackball and SET on first case to be deleted then scroll to last cast to be deleted and press SHIFT (on keyboard) and SET at the same time. This will highlight all the cases in between the 2 you selected
   - Press Delete on the right side of the screen.
   - Locked cases cannot be deleted.

12. **System care:**
   - If the system freezes or locks up, press OTHER on touch screen, press IQ report. If this is not possible, then write down the date and time of problemwhat you were doing, when it happened then reboot machine. If you get an error message on the screen, write down the message (or take a picture with your cell phone if you want!)
   - If the system needs a full shut down, you will find the breaker on the bottom of the machine on the back panel. Turn the system off, flip the breaker (at the back on the very bottom, right side between the 2 back wheels), unplug the system and leave it off for five minutes before booting back up.
   - Cleaning probes: Transducer Head - use *T-Spray* or other approved disinfecting spray. (chemical composition for products we recommend using: up to 78°/o Ethanol (sterilization), up to 70°/o Isopropyl Alcohol, i.e. *CaviCide/Caviwpes are 17.2%* Isopropanol and 0.28°/o Quaternary ammonium) There is a pamphlet

inside the probe boxes that gives all the acceptable products that can be used to clean the probes.

- For monitor screen and touch screen soft damp cloth-mild soap, or lens cleaner that you use for plastic eye-glasses, or LCD monitor cleaner.
- For console, damp cloth. If you use a disinfectant cloth, do not scrub, wipe gently.
- For probes and console, after using any sort of disinfectant spray or wipe, do not leave solution sitting on surface. Follow with wipe using a damp cloth and dry.

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1. 2 Filters are located in the front of the machine, under the foot pedal. They cc1n be vacuumed or washed nd thoroughly dried.
2. To delete patient studies from the machine, press "Patient Browser"- "All List"- Wait for the blue refresh bar at the top of the screen to finish- scroll to the bottom of the patient list- press "Set" on t he last name- scroll till where you want to delete- press "Shift"+ "Set"- press "Delete".
3. Always use the *Quickstarts* to change tt1e settings, for example use "XL" or "Penetration" for larger patients. It is very important to use the Endovaginal quickstart or preset when doinga TV study.
4. To add operator initials, Select a patient name from the list or select emergency ID, type your initials in the operator column and press Start.
5. To review images from a previous patient, go to patient browser, select the patient by pressing set and then press View.
6. To review images for the current study, press exam review.
7. To delete an unwanted image for the current study, press exam review, scroll through the images, mark the image you wish to delete by clicking on the garbage bin sign, you can keep marking multiple images and in the end press on the delete sign.
8. To restarta study within 24 hours, press patient browser, select the patient and press on restart and confirm.
9. To manually send the images to PACS, go to patient browser, select the patient, and select Copy- Copy. To check the status go to JobStatus and confirm the images are sent.
10. Always delete any "Failed" job status.
11. For Twin/ Multiple gestation, press Cale and on the touch screen select Fetus A, B,C or D.
12. For AFI and GS measurements, after performing the first measurement, you have to press the "Next" button for the 2nd measurement to come up. For AFI it is nice to use the Quad format.
13. To delete a measurement from the report, set inside the measurement box, backspace and press enter.
14. To add EDD or LMP after starting an OB exam press Cale and then GA Input on touch screen.
15. Spline Trace isa nice method to measure cervix or retroverted uterus. To activate it, press Caliper and select Trace Length from touch screen.
16. Machine has multiple post processing option;
    a. 2D gain, TGC, Dynamic Range, Zoom, Dual
    b. PW gain, Baseline, Angle correction, Sweep Speed
    c. PW/ Color Doppler invert
17. The scroll wheel in the centre has multiple functions:
    a. 2D focus
    b. Color Doppler and PW scale/PRF
    c. Post *freeze* PW baselin9 shift
18. To change the system *time*, Press "Other" on touch screen- select "Page 2"- "Preset Launcher"- On the monitor "System Preset"- under General change the time- "Save-" "Close".

OBST : Renal trace
CALIPERS → AREA → METHOD ELLI

CMRITO

What you must know about ... preventing sexual abuse

The College of Medical Radiation and Imaging Technologists of Ontario (CMRITO) is responsible for responding to complaints and reports of sexual abuse by medical radiation and imaging technologists (MRITs). We investigate every allegation of sexual abuse in accordance with the *Regulated Health Professions Act, 1991* (RHPA), and are committed to supporting patients through this process.

Sexual abuse is never acceptable and will not be tolerated.

What is sexual abuse?

Sexual abuse is broadly defined in the RHPA and includes sexual intercourse or other forms of sexual relations, touching of a sexual nature, and behaviour or remarks of a sexual nature.

Sexual abuse of a patient occurs when an MRIT:

- has physical sexual relations with a patient
- touches a patient in a sexual manner (for example, touching a patient's genitals when it is not required as part of a procedure)
- behaves in a sexual manner towards a patient (for example, touching a patient's shoulder or hand unnecessarily and in a manner that implies a sexual interest in the patient)
- makes remarks of a sexual nature to a patient (for example, commenting on the appearance of a patient's breasts or genitals)

Any touching, behaviour, and/or remarks of a sexual nature are considered sexual abuse.

Contact and comments that are of a clinical nature and are appropriate to the care provided are not considered sexual abuse.

The mandatory penalties for sexual abuse include suspension and/or revocation of a registrant's registration.

Zero tolerance

CMRITO has a zero tolerance policy for the sexual abuse of patients.

Medical radiation and imaging technology requires physical contact with patients when performing diagnostic procedures and delivering therapeutic treatments. MRITs should use professional and supportive behaviours in delivering these services and ensure that all physical contact is clinically appropriate and acceptable to the patient.

Zero tolerance means that:

- acts of sexual abuse are never acceptable and will not be tolerated
- any allegation of sexual abuse of patients will be investigated by CMRITO
- CMRITO recognizes the extent of injury that sexual abuse causes both the patient and others related to the patient
- MRITs deliver services to a wide range of individuals from different cultural backgrounds with a variety of viewpoints and perspectives, and must therefore accept that there may be broad definitions of what is considered sexual abuse and appreciate that what constitutes "sexual nature" may depend on the patient's experience
- MRITs must be sensitive to the needs of their patients and, if a patient is uncomfortable with the words or behaviour being used by an MRIT, change their words or behaviour

CMRITO provides funding for therapy and counselling for patients who allege that they have been sexually abused by a registrant, as outlined in the RHPA.

Principles of communication and touching

MRITs must communicate effectively and pay careful attention to the way they share information and the words they use when speaking with patients. They must also be active and compassionate listeners, observe body language, and be sensitive to their patient's concerns and needs. Awareness of cultural differences and physical barriers which may interfere with clear communication – and respect for these differences – will help MRITs practise the profession in a responsive and responsible manner.

CMRITO is committed to providing MRITs with information and resources to help them perform their duties responsibly and in a manner that reflects the profession's commitment to respecting the personal dignity of every individual who entrusts themselves to their care. CMRITO's *What you must know about … communicating with patients* provides helpful guidelines for effective communication.

MRITs must:

- communicate effectively and pay attention to the ways in which information is conveyed and the words they select when speaking with patients
- be active and compassionate listeners that are sensitive to their patient's concerns and needs
- be aware of and respect cultural and physical barriers which may interfere with clear communication

Following the principles outlined below will help MRITs achieve the high standards of integrity and effectiveness that should be part of their care for their patients.

Principles of communication and touching

Talk before touching	• explain to the patient why, when, and where you might touch them • ensure that the patient has provided consent before starting the procedure • only touch the patient where needed to conduct the procedure • respect the patient's personal space • respect the patient's right to change their mind, pause, or end the procedure at any time
Treat every patient with respect	• greet the patient and anyone accompanying them in a welcoming manner and with a positive attitude • introduce yourself to the patient, tell them your profession, and what procedure you are going to perform • show a respectful and caring attitude towards the patient by listening to and respecting their perspectives and choices • respect the dignity, privacy, and autonomy of the patient • provide individualized, comprehensive, and safe treatment during examinations or therapy sessions, considering the patient's particular physical and emotional needs, values, and cultural background

Reserve judgement and never make assumptions	• ask your patient how they wish to be addressed • clarify the role of anyone accompanying the patient • do not make assumptions or judge people, their families, or their abilities • be aware of your own body language, tone of voice, and non-verbal behaviour • actively listen to the patient to be aware of their concerns and anxieties, and respond appropriately throughout the procedure
Speak directly to the patient	• maintain eye contact when speaking to the patient • provide clear and understandable information to the patient or patient's substitute decision maker prior to, during, and after the procedure, using an interpreter if necessary
Maintain confidentiality	• preserve and protect the patient's information and confidentiality
Create a safe environment	• maintain clear and appropriate professional boundaries in the MRIT-patient relationship • avoid placing patients at unnecessary risk of harm, pain, or distress • treat 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

Mandatory reporting of sexual abuse

Under the RHPA, health professionals must file a written report if they have reasonable grounds obtained through the course of their practice to believe that a patient has been sexually abused by an MRIT or a registrant of any other regulated health College.

Failure to report sexual abuse of patients when there are reasonable grounds to believe the abuse has occurred is an offence under the RHPA and can lead to severe penalties on conviction including a fine of not more than $50,000.

Specifically, if an MRIT believes a patient has been sexually abused, they must:

- submit a written report to the Registrar of the College that regulates the profession of the person being reported within 30 days or, if there is reason to believe that the abuse will continue or that others will be abused, the report must be submitted immediately

Additional information about mandatory reporting under the RHPA:

- MRITs are required to report information obtained in the course of practising the profession
- MRITs must only submit a report if the name of the practitioner involved in the alleged abuse is known
- the patient's name must not be included in the report without their written consent
- the Act provides protection to a person who files a report of sexual abuse in good faith

Conclusion

Sexual abuse by health professionals is never acceptable. CMRITO will investigate all complaints and reports of sexual abuse by MRITs against patients in accordance with the RHPA. Any CMRITO registrant found guilty of sexual abuse will face significant consequences, up to and including suspension, loss of registration, and possible criminal prosecution through the legal system. CMRITO is committed to ensuring patient safety and supporting patients through the investigation process.

For more information about preventing sexual abuse, please contact the CMRITO Professional Conduct team at professionalconduct@cmrito.org.

CMRITO
Regulator of medical radiation and imaging technologists in Ontario

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CMRITO STANDARDS OF PRACTISE

Introduction

The Standards of Practice have been developed by the College of Medical Radiation and Imaging Technologists of Ontario[1] (CMRITO or the "College") to describe the expectations for professional practice of members of the College. The Standards of Practice describe what each member is accountable and responsible for in practice. They represent performance criteria for members and can be used to interpret the scope of practice to the public and other health care professionals.

In the Standards of Practice, "members" refers to all members of the CMRITO; that is, members in all of the five specialties: radiography, radiation therapy, nuclear medicine, magnetic resonance and diagnostic medical sonography. In the Standards of Practice, "profession" refers to the profession of medical radiation and imaging technology, which includes all of the five specialties: radiography, radiation therapy, nuclear medicine, magnetic resonance and diagnostic medical sonography.

The Standards of Practice reflect the knowledge, skills and judgment that members need in order to perform the services and procedures that fall within the scope of practice of the profession.

The *Regulated Health Professions Act* and the companion health profession Acts govern the practice of regulated health professions in Ontario. For this profession, the companion Act is the *Medical Radiation and Imaging Technology Act* (MRIT Act). The *Medical Radiation and Imaging Technology Act* sets out the scope of practice statement for the profession, as follows:

" The practice of medical radiation and imaging technology is the use of ionizing radiation, electromagnetism, soundwaves and other prescribed forms of energy for the purposes of diagnostic or therapeutic procedures, the evaluation of images and data relating to the procedures and the assessment of an individual before, during and after the procedures."

The *Medical Radiation and Imaging Technology Act* also sets out which of the controlled acts as set out in the *Regulated Health Professions Act*, members are authorized to perform. These are known as authorized acts. The *Medical Radiation and Imaging Technology Act* states:

[1] On January 1, 2020, the *Medical Radiation and Imaging Technology Act, 2017* (MRIT Act) came into force. The MRIT Act changed the name of the College of Medical Radiation Technologists of Ontario to the College of Medical Radiation and Imaging Technologists of Ontario, and the name of the profession to the medical radiation and imaging technology profession. [2]

" In the course of engaging in the practice of medical radiation and imaging technology, a member is authorized, subject to the terms, conditions and limitations imposed on their certificate of registration, to perform the following:

1. Administering substances by injection or inhalation.

2. Tracheal suctioning of a tracheostomy.

3. Administering contrast media, or putting an instrument, hand or finger,

- ***Beyond the opening of the urethra,***
- ***Beyond the labia majora,***
- ***Beyond the anal verge, or***
- ***Into an artificial opening of the body.***

4. Performing a procedure on tissue below the dermis.

5. Applying a prescribed form of energy."

The Standards of Practice are intended to be generic. The indicators that follow each Practice Standard indicate the application of the Practice Standard in a specific dimension of practice. Most indicators refer to tasks that are common to all members. Indicators that refer to tasks generally performed only by members in one of the specialties are listed under separate headings. The methods for implementing each task may be determined by departmental policies and procedures.

In the event that the Standards of Practice set a standard that is higher than departmental policy or procedure, the member must comply with the standard set by the Standards of Practice. In the Standards of Practice, the term "legislation" refers to both statutes and regulations.

Under the College's Standards of Practice, members of the College are expected to be:

Competent: meaning to have the necessary knowledge, skills and judgment to perform safely, effectively and ethically and to apply that knowledge, skill and judgment to ensure safe, effective and ethical outcomes for the patient. This means that members must maintain competence in their current area of practice, must refrain from acting if not competent, and must take appropriate action to address the situation.

Accountable: meaning to take responsibility for decisions and actions, including those undertaken independently and those undertaken as a member of a team. This means that members must accept the consequences of their decisions and actions and act on the basis of what they, in their clinical judgment, believe is in the best interests of the patient. **3**

Collaborative: meaning to work with other members of the health care team to achieve the best possible outcomes for the patient. This means members are responsible for communicating and coordinating care provision with other members of the health care team, and taking appropriate action to address gaps and differences in judgment about care provision. Members must take appropriate action if they feel these interests are being unnecessarily and unacceptably compromised. This includes not implementing ordered procedures or treatment plans that, from their perspective, appear to be contraindicated, and in this event, taking appropriate action to address the situation.

1. Legislation, standards and ethics

In order to be registered as a member of the College of Medical Radiation and Imaging Technologists of Ontario, members must meet the professional education and other registration requirements set by the College. They must continue to educate themselves about practical, legal, ethical and other matters pertaining to the profession. Members must be competent, accountable and collaborative in their practice.

Practice Standard: Members must understand, and adhere to, the legislation governing the practice of the profession, the Standards of Practice set by the College, the Code of Ethics and the by-laws of the College.

Indicators

Members must:

a. have the knowledge, skills and judgment to perform procedures undertaken in the course of the practice of the profession

b. take responsibility for decisions and actions, including those undertaken independently and those

undertaken as a member of the team

c. work with other members of the health care team to achieve the best possible outcomes for the patient

d. adhere to all relevant provincial and federal legislation and guidelines governing the practice of the profession

e. adhere to the Standards of Practice set by the College

f. adhere to the Code of Ethics and the by-laws of the College
g. adhere to all regulations made under the *Medical Radiation and Imaging Technology Act* including:

- Quality Assurance
- Registration
- Professional Misconduct
- Advertising

2. Equipment and materials

The practice of members entails the use of a wide range of equipment and materials. Members must know and understand the functions, capabilities, specifications and hazards of the equipment and materials they use in the course of their practice.

Practice Standard: Members must have the knowledge, skills and judgment to select the appropriate equipment and materials for procedures ordered by a physician or other authorized health professional, to make determinations as to the quality, serviceability and operability of the equipment and materials, and to take any corrective actions required to meet standards set by legislation, facility policies and manufacturers' guidelines. Members must be skilled in making safe, efficient and effective use of resources to produce the desired examination information or deliver safe, effective treatment.

Indicators

Members must:

a. ensure the room is prepared for the procedure specified in the order

b. select and set up the equipment and materials needed for the procedure specified in the order

c. select the correct substances to be administered orally, by injection or inhalation, or into the body through an orifice

d. prepare diagnostic or therapeutic substances as required

e. conduct the required quality control tests, or ensure that the required quality control tests have been conducted, on each piece of equipment and any materials used in the ordered procedure, according to the applicable legislation and the facility policies and manufacturers' guidelines

f. ensure that the results of quality control tests are acceptable

g. if quality control tests are not within acceptable limits, take corrective action to ensure that the standards set by legislation, facility policies and manufacturers' guidelines are met

h. determine the quality, serviceability, and operability of the equipment and materials to be used in the procedure in accordance with the standards se t by legislation, facility policies and manufacturers' guidelines, and if the standards are not met, take corrective action

i. determine, set and verify the technique and protocol to be used in the procedure

j. verify all required immobilization and/or beam modification devices

k. make use of appropriate shielding devices

In addition, members in the specialty of radiation therapy must:

l. prepare or construct immobilization or personalized devices and/or beam modification devices as required

In addition, members in the specialty of magnetic resonance must:

m. administer and follow the necessary safety precautions for entry to the magnet room

In addition, members in the specialty of nuclear medicine and radiation therapy must:

n. dispose of expired, unused or contaminated eluate, radioactive materials and all administrative devices in accordance with legislation and established safety protocols

o. store radiopharmaceuticals and radioactive materials according to manufacturers' specifications

In addition, members in the specialty of diagnostic medical sonography must:

p. clean and/or reprocess transducers, or ensure that transducers are cleaned and/or reprocessed after each patient use in accordance with the manufacturers' guidelines, other applicable guidelines and the facility policies

q. use, store and dispose of ultrasound gel and gel containers in accordance with applicable guidelines and the facility policies **6**

3. Diagnostic and therapeutic procedures

Members employ ionizing radiation, radiopharmaceuticals, electromagnetism and soundwaves to create images and data that are part of diagnostic imaging examinations or that are used for defining and recording treatment parameters. These images may be dynamic, on film, digital displays, three-dimensional models or templates. Members in the specialties of radiation therapy and nuclear medicine administer ionizing radiation to treat cancer and other diseases.

Members who apply ionizing radiation do so under the authority of and in accordance with the *Healing Arts Radiation Protection Act* and, where applicable, the *Nuclear Safety and Control Act* and their respective regulations. Members are permitted to apply electromagnetism for magnetic resonance imaging under an exemption set out in the Controlled Acts regulation made under the *Regulated Health Professions Act*. Members are also permitted to apply soundwaves for diagnostic ultrasound under an exemption set out in the Controlled Acts regulation made under the *Regulated Health Professions Act*.

Members perform five controlled acts, which they are authorized to perform under the *Medical Radiation and Imaging Technology Act*. These are:

1. administering substances by injection or inhalation;
2. tracheal suctioning of a tracheostomy;
3. administering contrast media or putting an instrument, hand or finger,
• beyond the opening of the urethra,
• beyond the labia majora,
• beyond the anal verge, or
• into an artificial opening of the body;
4. performing a procedure on tissue below the dermis; and
5. applying a prescribed form of energy.

Practice Standard: Members must be able to create images and data that are sufficiently accurate and clear for the diagnostic or therapeutic procedures that are ordered by a physician or other authorized health professional. In the case of procedures that use ionizing radiation, members use only the minimum amount of radiation necessary during the course of the procedure. Members performing procedures using soundwaves for diagnostic ultrasound use the minimum acoustic power output and minimum exposure time. Members must be proficient in evaluating the images, data and tests relating to the procedures to ensure that the images, data and tests are satisfactory. Members must be able to administer ionizing radiation, radiopharmaceuticals, electromagnetism for magnetic resonance imaging and soundwaves for diagnostic ultrasound accurately and in accordance with the order of the physician or other authorized health professional for the diagnostic or therapeutic procedure and the applicable legislation. Members must not apply or administer ionizing radiation or radiopharmaceuticals unless the conditions under the applicable legislation (including without limitation, the *Healing Arts Radiation Protection Act* and its regulations and the *Nuclear Safety and Control Act*, its regulations and licenses issued thereunder) have been met.

Under the *Medical Radiation and Imaging Technology Act*, members are authorized to perform five controlled acts (“authorized acts”) as required in the course of engaging in the practice of the profession. They must not perform the authorized acts or any exempted controlled act unless the conditions under the *Regulated Health Professions Act*, the *Medical Radiation and Imaging Technology Act* and their respective regulations, and the Standards of Practice have been met.

Indicators

Members must:

a. perform procedures involving the application or administration of ionizing radiation only when the conditions under the applicable legislation have been met (This includes, without limitation, the *Healing Arts*

Radiation Protection Act and its regulations and the *Nuclear Safety and Control Act*, its regulations and licenses issued thereunder.)

b. perform only those controlled acts that have been authorized or exempted or excepted under the legislation or delegated in accordance with the legislation and the Standards of Practice[2]

c. perform authorized acts or delegated or exempted controlled acts only when the conditions under the legislation and the Standards of Practice have been met

d. ensure that the appropriate order authorizing the performance of the procedure is in place:

1. for application of ionizing radiation: the order must be from a physician or other authorized health professional listed in the *Healing Arts Radiation Protection Act* or regulations

[2] Members may accept delegation of other procedures that are controlled acts under the *Regulated Health Professions Act* and not authorized to members under the *Medical Radiation and Imaging Technology Act* provided they comply with the *Regulated Health Professions Act* and the Standards of Practice as set out in Practice Standard 6, Professional relationships. for nuclear medicine procedures: the order must be from a person authorized under the regulations made under the *Public Hospitals Act* or in accordance with the generally accepted professional standards established under the *Independent Health Facilities Act*

2. for application of electromagnetism for magnetic resonance imaging procedures: the order must be from a physician or another authorized health professional listed in the Controlled Acts regulation made under the *Regulated Health Professions Act*, and in accordance with that regulation

3. for application of soundwaves for diagnostic ultrasound procedures: the order must be from a physician or another authorized health professional listed in the Controlled Acts regulation made under the *Regulated Health Professions Act*, and in accordance with that regulation

4. for authorized acts (other than the application of electromagnetism for magnetic resonance imaging procedures or the application of soundwaves for diagnostic ultrasound procedures): the order must be from a physician

e. perform procedures, including authorized acts, only in the course of engaging in the practice of the profession

f. not perform procedures contrary to any terms, conditions or limitations placed upon the member's certificate of registration

g. have and apply the necessary knowledge, skills and judgment to perform and manage the outcomes of performing the procedure safely, effectively and ethically

h. ensure that patient consent has been obtained

i. be responsible and accountable for performing the procedure and managing the outcomes having considered:

1. the known risks to the patient in performing the procedure

2. the predictability of the outcomes in performing the procedure

3. whether the management of the possible outcomes is within the member's knowledge, skill and judgment given the situation

4. any other factors specific to the situation to ensure the procedure is implemented safely, effectively and ethically not perform any procedure or provide any advice which may result in serious bodily harm unless that procedure or advice is within the scope of practice of the profession or the member is authorized or permitted to do so by legislation

j. position the patient as required for the diagnostic or therapeutic procedure

k.ensure the area to be diagnosed or treated will be displayed on the resultant image or captured electronically

l. use radiation protection devices and other patient protection devices as required

m.instruct the patient on breathing and movement procedures

n. ensure that the orientation of the body and other pertinent parameters are marked correctly on the images and data

o. ensure the exposure provides optimum image quality while using minimal radiation

p. ensure examination results (images and data) provide all the information requested in the order

q.carry out the procedures ordered

r. assess the patient's condition before, during and after the procedure or course of treatment

s.respond to any change in the patient's condition during or after the procedure or course of treatment

t. complete the procedure, advise the patient of any post-procedural care, and transfer the care of, or release, the patient

In addition, members in the specialty of radiography, nuclear medicine, magnetic resonance and diagnostic medical sonography must:

u. determine if the images and/or data are of sufficient diagnostic quality or if additional or repeat images are necessary

In addition, members in the specialty of magnetic resonance must:

v. perform procedures involving the application of electromagnetism for magnetic resonance imaging only when the conditions under the *Regulated Health Professions Act*, the *Medical Radiation and Imaging Technology Act* and their respective regulations have been met

In addition, members in the specialty of diagnostic medical sonography must:

w.perform procedures involving the application of soundwaves for diagnostic ultrasound only when the conditions under the *Regulated Health Professions Act*, the *Medical Radiation and Imaging Technology Act* and their respective regulations have been met

x. use the minimum acoustic power output and minimum exposure time to obtain the optimum image quality and the necessary clinical information

In addition, members in the specialty of radiation therapy must:

y. develop and/or interpret a treatment plan for each patient

aa. calculate treatment doses and duration of administration

bb. ensure use of record and verification systems

cc. identify the treatment field and treatment volumes

dd. determine if the image verifies treatment parameters or if a repeat image is necessary

ee. assess and match the treatment verification image with the reference image and make required adjustments to patient position

ff. select and/or verify treatment parameters

gg. administer treatment

4. Safe practice

Members operate equipment, apply ionizing radiation, electromagnetism for magnetic resonance imaging and soundwaves for diagnostic ultrasound, and administer radiopharmaceuticals. All of these could be dangerous if used incorrectly. Members endeavour, at all times and in every aspect of their practice, to reduce the risk of harm to their patients, to themselves, to their colleagues and to any other individuals who may be present in the practice environment.

Practice Standard: Members must have and maintain the knowledge, skills and judgment to practise safely by adhering to all relevant provincial and federal legislation and guidelines, departmental protocols and policies and manufacturers' directions pertaining to health and safety. In the event of any unexpected problems or emergencies, members must be competent and prepared to handle or to assist in the management of the situation.[11]

Indicators

Members must:

a. observe all departmental and facility policies and relevant provincial and federal legislation and guidelines pertaining to health and safety, such as:

1. *Regulated Health Professions Act* and its regulations

2. *Medical Radiation and Imaging Technology Act* and its regulations

3. *Public Hospitals Act* and its regulations

4. *Independent Health Facilities Act* and its regulations

5. *Healing Arts Radiation Protection Act* and its regulations

6. *Occupational Health and Safety Act* and its regulations

7. *Nuclear Safety and Control Act* and its regulations and licenses issued thereunder

8. *Radiation Emitting Devices Act* and its regulations

9. *Transportation of Dangerous Goods Act* and its regulations

10. *Health Protection and Promotion Act* and its regulations

11. Health Canada's Technical Reports and Publications, including:

• Safety Code 20A – X-Ray Equipment in Medical Diagnosis Part A: Recommended Safety Procedures for Installation and Use, 1980

• Safety Code 26 – Guidelines on Exposure to Electromagnetic Fields from Magnetic Resonance Clinical Systems, 1987

• Safety Code 30 – Radiation Protection in Dentistry, 1999

• Safety Code 35 – Safety Procedures for the Installation, Use and Control of X-ray Equipment in Large Medical Radiological Facilities, 2008

• Safety Code 36 – Radiation Protection and Quality Standards in Mammography - Safety Procedures for the Installation, Use and Control of Mammographic X-ray Equipment, 2013

As Low As Reasonably Achievable (ALARA) principle

b. conduct the appropriate quality control tests, or ensure that the appropriate quality control tests have been conducted, for all equipment and substances to be used in the diagnostic or therapeutic procedure

c. take corrective action if quality control tests are not within acceptable limits

d. use substances only before their expiry time or date

e. verify the patient's identity for all diagnostic or therapeutic procedures

f. prior to performing the procedure, ascertain whether there are any contraindications to the procedure, including pregnancy for procedures involving ionizing radiation, and notify the patient's physician, authorized health professional, radiologist, nuclear medicine physician, cardiologist or radiation oncologist of any

contraindications and obtain direction to proceed, modify or halt the procedure

g. prior to administering a substance orally, by injection or inhalation, or into the body through an orifice, ascertain whether there are any contraindications to administering the substance to the patient and make necessary explanations, or referrals or implement necessary restrictions

h. assess the patient's physical and emotional limitations and ensure that the patient will not be expected to perform any task or movement that would cause physical harm

i. take all reasonable precautions to ensure that no equipment can injure a patient

j. use the ALARA principle to minimize patient exposure to radiation and soundwaves for the procedure

k. use shielding/protective devices where indicated

l. initiate emergency response procedures, notify a physician (if possible) and assist in, or carry out, emergency treatment as required if a patient suffers any adverse reaction to treatment or to administered substances

m. use appropriate aseptic techniques and infection control procedures in the course of the diagnostic or therapeutic procedure

n. protect themselves, their colleagues, other members of the health care team, any other individuals who may be present as well as any patient from any unnecessary exposure to radiation[13]
o. ensure all positioning aids and immobilization devices maintain the patient's position appropriate to the diagnostic or therapeutic procedure according to departmental or facility policy

p. assess the patient's condition before, during and after the course of treatment or procedure

q. where appropriate, remove markers and accessory equipment/devices before the patient is released

In addition, members in the specialty of magnetic resonance must:

r. ensure that there are no contraindications present that could harm the patient or would exclude the patient from having the examination

s. ensure that all equipment and devices, both patient-specific and accessory, are MR compatible before being brought into the MR area

t. administer and follow the necessary safety precautions for entry to the magnet room to protect themselves, the patient, their colleagues, other members of the health care team and any other individuals who may be present

In addition, members in the specialty of nuclear medicine must:

u. conduct personal and area contamination monitoring

v. decontaminate where necessary in accordance with any license(s) issued under the *Nuclear Safety and Control Act*

w. use appropriate personal protection equipment when handling radioactive materials in accordance with any license(s) issued under the *Nuclear Safety and Control Act*

In addition, members in the specialty of radiation therapy must:

x. label and orient all patient-specific ancillary equipment [14]

Relationships with patients

Members have patient care as their main concern.

Practice Standard: Members must maintain clear and professional boundaries in relationships with patients and treat all patients with dignity and respect. Members must have the knowledge, skills and judgment to avoid placing patients at unnecessary risk of harm, pain or distress. Members 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. Members must understand how and act to protect the confidentiality of all professionally acquired information about patients and the privacy of patients with respect to that information, while facilitating the effective delivery of health care.

Indicators

Members must:

y. provide clear and understandable information to the patient or patient's substitute decision maker prior to, during and after the diagnostic or therapeutic procedure, using an interpreter if necessary

z. give the patient or patient's substitute decision maker an opportunity to ask questions

aa. provide the patient or patient's substitute decision maker with answers to their questions within the scope of the profession's responsibility

bb. refer questions of the patient or patient's substitute decision maker that are outside the scope of the profession's responsibility to an appropriate health professional for answers

cc. carry out diagnostic or therapeutic procedures only with the informed consent of the patient or the patient's substitute decision maker

dd. treat the patient with dignity and respect and in accordance with the Code of Ethics of the College

ee. make modifications to procedures based on the patient's physical, medical and/or emotional status and needs, based on the member 's assessment of the patient's physical, medical and/or emotional status and needs

ff. instruct the patient to remove only the clothing and items that will interfere with the diagnostic or therapeutic procedures

gg. provide the patient with a gown or sheet to cover areas where clothing was removed

hh. explain to the patient when and where the member might touch them and why

ii. touch the patient in only those areas needed to facilitate carrying out the procedure

jj. keep all patient information confidential except when necessary to facilitate diagnosis or treatment of the patient, or when legally obliged or allowed to disclose such information

kk. comply with any applicable privacy legislation such as the *Personal Health Information Protection Act* and its regulations

ll. comply with all relevant legislation such as the *Health Care Consent Act*

mm. comply with the *Regulated Health Professions Act* pertaining to the prevention of sexual abuse and the College's sexual abuse prevention program

5. Professional relationships

Professional relationships in health care settings are based on mutual trust and respect, and result in improved patient care.

Practice Standard: Members must be able to practice effectively within interprofessional care teams to achieve the best possible outcomes for the patient. Members are responsible for communicating about and coordinating care provision with other members of the team, and must be able to take the appropriate action to address gaps and differences in judgment about care provision.

Members may accept the delegation of controlled acts under the *Regulated Health Professions Act* not authorized to members under the *Medical Radiation and Imaging Technology Act*, provided they comply with the *Regulated Health Professions Act* and the Standards of Practice. Members cannot delegate to other individuals controlled acts authorized to members under the *Medical Radiation and Imaging Technology Act*.

Indicators

Members must:

a. use a wide range of communication and interpersonal skills to effectively establish and maintain professional relationships

b. demonstrate an understanding of and respect for the roles, knowledge, expertise and unique contribution by other members of the health care team for the provision of quality care[16]

c. share knowledge with other members of the health care team to promote the best possible outcomes for patients

d. collaborate with other members of the health care team for the provision of quality care

e. participate effectively in interprofessional team meetings

f. resolve concerns about an order or treatment plan by:

1. discussing the concern directly with the responsible health professional

2. providing a rationale and best practice evidence in support of the concern

3. identifying outcomes desired for resolution

4. documenting the concern and steps taken to resolve it in the ap propriate record

g. perform controlled acts not authorized to members under the *Medical Radiation and Imaging Technology Act*, based on delegation, only when the following conditions have been met:

1. the health professional who is delegating the controlled act (the delegator) is a member of a regulated health profession authorized by their health profession Act to perform the controlled act

2. the delegator is acting in accordance with any applicable legislation and any guidelines and policies of their regulatory body governing delegation, and has not been restricted or prohibited from delegating the controlled act

3. the delegator has the knowledge, skills and judgment to perform and delegate the controlled act

4. the member has the knowledge, skills and judgment to perform the controlled act delegated to them safely, effectively and ethically given the circumstances of the situation

5. a written record of the transfer of authority (delegation) and certification of the member's competence is maintained

6. the member complies with any conditions established by the delegator in order for the member to maintain the authority to perform the controlled act

7. patient consent has been obtained[17]
8. the appropriate order authorizing the performance of the controlled act delegated to the member is in place

7. Records and reporting

Creating and maintaining records and reports are essential components of the professional practice of members. Members' records and reports provide information to other health care professionals about relevant aspects of patient care, treatment and assessment.

Practice Standard: Members must be proficient in creating records, charts, incident and other reports that attest to the diagnostic, treatment, quality assurance, workplace and patient safety procedures that have been carried out. Members must have the knowledge, skills and judgment to record information that will adequately identify the subjects of all the images and data they create and treatments they administer. Members must produce records and reports that are accurate, complete, legible and timely.

Indicators

Members must:

a. record results of quality control tests

b. record and report any equipment faults or problems

c. record and notify the patient's physician, authorized health professional, radiologist, nuclear medicine physician, cardiologist or radiation oncologist of any allergies, abnormal test results, pregnancy or other contraindications to the ordered procedure

d. mark all images and data with the patient's identity

e. ensure all images and data are archived according to principles and guidelines established by the employment facility

f. record the patient's reactions to the treatment or procedure or any administered substances

g. record all pertinent aspects of patient care and all procedures performed, including emergency treatments

and descriptions of, and reasons for, any deviations from standard procedures on order forms, treatment prescriptions, patient health records or other relevant documentation

h. forward patients' records, images and pertinent data to appropriate recipients[18]
i. record and inform the patient and/or members of the health care team of any follow-up care required

In addition, members in the specialty of nuclear medicine and radiation therapy must:

j. record results of radiopharmaceutical assays, quality control and other tests, radioactive preparations and disposal methods of radioactive materials

In addition, members in the specialty of nuclear medicine must:

k. record receipt and disposal of radiopharmaceuticals, generators and radioactive materials

l. label radiopharmaceutical preparations

m. maintain radiopharmaceutical and pharmaceutical dispensing records

In addition, members in the specialty of radiation therapy must:

n. record and communicate any concerns regarding the treatment or treatment prescription to the appropriate radiation oncology personnel

In addition, members in the specialty of diagnostic medical sonography must:

o. record and communicate their observations and technical impressions regarding the diagnostic ultrasound procedure to the reporting health professional

8. Continuing competence

Members must maintain competence in their current area of practice and continually improve their competence in order to respond to changes in practice environments, advances in technology and the changing health care environment.

Practice Standard: Members must have, maintain and apply the necessary knowledge, skills and judgment to ensure safe, effective and ethical outcomes for the patient. Members must maintain competence in their current area of practice and must refrain from acting if not competent. Members must obtain and maintain the necessary knowledge, skills and judgment to respond to changes in practice environments, advances in technology and other emerging issues. Members must participate in the College's Quality Assurance Program as part of maintaining and improving their competence.[19]

Indicators

Members must:

a. maintain competence and refrain from performing activities that the member is not competent to perform

b. maintain and apply current and relevant scientific and professional knowledge and skills in their practice

c. obtain and maintain the necessary knowledge, skills and judgment to respond to changes in practice environments, advances in technology and other emerging issues

d. assume responsibility for professional development and for sharing knowledge with others

e. invest time, effort and other resources to maintain and improve their knowledge, skills and judgment

f. engage in a learning process to enhance practice

g. participate in the College's Quality Assurance Program

h. collaborate with other members of the health care team to creat quality practice setting

C

CMRITO CODE OF ETHICS

Introduction

The Code of Ethics is a set of principles that delineates responsible conduct and the ethical and moral behaviour of registrants of the College of Medical Radiation and Imaging 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 registrants of the College in the province of Ontario.

In the Code of Ethics, "registrants" refers to all registrants of the CMRITO; that is, registrants in all of the five specialties: radiography, radiation therapy, nuclear medicine, magnetic resonance and diagnostic medical sonography. In the Code of Ethics, "profession" refers to the profession of medical radiation and imaging technology, which includes all of the five specialties: radiography, radiation therapy, nuclear medicine, magnetic resonance and diagnostic medical sonography.

The Code of Ethics shall serve as a guide by which registrants 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 registrants 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 registrants choose the right, fair, good and just action. Each registrant 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

Registrants 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

Registrants act in the best interests 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 registrant-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 or therapy sessions, 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

Registrants 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 and Imaging 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

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

Indicators

a. consulting with, referring to and co-operating 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 registrant's responsibility

c. educating colleagues and other health professionals about practices and procedures relating to the profession

5. Personal responsibility

Registrants 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 substances or any condition that might impede the delivery of safe service