



Ordre des technologues  
en **imagerie médicale**,  
en **radio-oncologie** et en  
**électrophysiologie médicale**  
du Québec

# ENTRY-LEVEL PROFILE



Medical imaging  
**TECHNOLOGIST**  
— Ultrasound



**Ordre des technologues en imagerie médicale,  
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**Note:**

- To interpret this profile correctly, read the document in its entirety and refer to the Code of ethics and the general and specific standards of practice

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## Introduction

The entry profile to the profession demonstrates the competencies that a medical imaging technologist in the ultrasound field should possess upon entering the profession. It is aimed towards candidates presenting for the admission examination as well as to members of the admission committee of the Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec (OTIMROEPMQ).

The entry-level profile is a reference tool to partly serve as orientation for future technologists in their preparatory journey in obtaining their permit to exercise and partly serves to guide the drafting of the scenarios used during the admission examination. It is important to note that these scenarios are representative of the reality of the work environment and aim to evaluate the level of competency attained by the candidates as well as the evaluation of the integration of the theoretical knowledge in practice.

Also, the targeted competencies of the entry-level profile to the profession meet the prescribed current training requirements of the ministry.

According to the ministère de l'Enseignement supérieur (MES),

The goal of the Medical Ultrasound Technology program is to train medical imaging technologists in the field of medical ultrasound technology. Medical imaging technologists in the field of medical ultrasound technology are healthcare professionals who work in both public establishments (hospitals, university hospitals and CLSCs) and private clinics. Based on a medical prescription, technologists carry out a complete examination by using ultrasound equipment in accordance with the patients' condition and clinical history to acquire optimal medical images, videos and information that radiologists or other specialized physicians use to establish a diagnosis or a treatment plan. Through this expertise, medical imaging technologists in the field of medical ultrasound technology participate in and contribute to the delivery of the services required for patients. Medical ultrasound technologists may practise in the following subsectors of medical ultrasound for adult and pediatric clients:

- abdominal, pelvic and surface ultrasound
- obstetrical and gynecological ultrasound
- vascular ultrasound
- cardiac ultrasound
- breast ultrasound
- musculoskeletal ultrasound.

In their professional practice, medical imaging technologists in the field of medical ultrasound technology may be called upon to perform several types of examinations in all subsectors of medical ultrasound. The goal of the program of study is to enable the student to master the competencies that allow medical imaging technologists to perform a full ultrasound examination, taking charge of the patient throughout the examination, within the limits of professional practice in their field. Communication and close collaboration with radiologists and other specialist physicians responsible for diagnosis, as well as with other health professionals, form an integral part of their work. These technologists may also collaborate with or assist specialist physicians in other types of examinations such as ultrasound-guided medical procedures, e.g. biopsies. As part of their professional practice, medical imaging technologists in the field of medical ultrasound technology may be called upon to train technologists in the same field of expertise as well as other healthcare professionals. They may also conduct or collaborate in research in the field of ultrasound. To obtain their permit to practice their profession, graduates must be members of the Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec (OTIMROEPMQ). Pursuant to the Act respecting medical imaging technologists, radiation oncology technologists and medical electrophysiology technologists, certain activities are reserved for members of the Ordre. (Gouvernement du Québec, 2022, P.13)

This document has been updated to reflect the current Sonography Canada Competency (2019) Profile and the 2017 MES Occupational Analysis. It also takes into account Quebec's Medical Imaging, Radiation Oncology and Medical Electrophysiology Technologists Act, applicable regulations and standards of practice as well as OTIMROEPMQ's competency framework.

The Order's competency framework is based on the definition of a professional competence of the Office Québécois de la langue française (OQLF), which describes competence as a combination of knowledge, know-how and professional demeanor in the context of a concrete work situation (OQLF, 2013). It involves the integration of knowledge, skills, attitudes and judgment into real clinical situations that require technologists to solve problems, communicate and think critically to meet patient needs (OTIMROEPMQ, 2018-2019).

The first part of the document is dedicated to the professional profile describing the specific skills a technologist must possess. The detailed competencies are then grouped by theme. Please note that emphasis is placed on the critical thinking and technical gestures that a medical imaging technologist entering the profession must develop to work in partnership with the patient and other professionals in the multidisciplinary team. The proficiency level was based on the revised Bloom taxonomy (see Appendix 4).

Finally, at the end of this document, you will find 6 appendices (laws and regulations; equipment and materials; main examinations; Bloom's taxonomy; abbreviations and probe movements) as well as a bibliography that lists the references governing the profession.

# PROFESSIONAL ATTITUDE

This section is intended to identify specific attitudes that a technologist must have upon entering the profession. It is intrinsic to the routine practice of medical imaging technologist and applies to all sections of this document.

## AUTONOMY

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- Show initiative  
(acknowledge and be mindful of tasks to be done,...)
- Take decisions to be efficient in all situations  
(medical emergencies, failed equipment,...)
- Recognize one's limits and be able to seek help from the appropriate resources in order to allow proper management any given situation
- Demonstrate good judgment
- Be organized, responsible and methodical

## ADAPTATION TO THE WORK CONTEXT

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- Establish a relationship of trust with various staff  
(co-workers, specialist doctors, biomedical engineers, nurses,...)
- To integrate within the work team  
(adapt to the way co-workers and supervisors proceed, adapt to interdisciplinary and multidisciplinary teams...)
- Establish a relationship of respect with patients, peers and the interdisciplinary/multidisciplinary team
- Adapt to changes  
(team, technological advances, new exam procedures,...)
- Develop stress management and conflict resolution strategies



## **VERBAL AND NON-VERBAL COMMUNICATION**

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- Have the ability to communicate clearly, precisely and adapted to the clientele
- Develop trust  
(with the patient, team,...)
- Is empathetic, patient, respectful and available
- Have good listening skills and demonstrate openness towards others  
(with patients, co-workers,...)
- Control one's emotions while performing daily tasks
- Use verbal and non-verbal communication that is compatible with the professional ethics
- Express oneself in a constructive manner

## **COMMITMENT TO THE PROFESSION**

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- Be interested and motivated  
(conferences, current events,...)
- Demonstrate intellectual and scientific curiosity in one's area of expertise  
(commitment, critical thinking regarding one's daily work,...)
- Maintain one's knowledge up-to-date
- Show attention to detail, is vigilant and meticulous
- Be rigorous

## **RULES, ETHICS AND CODE OF ETHICS**

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- Show ethical behaviour  
(with the patient, peers, supervisors,...)
- Comply with the various laws, regulations, rules and standards
- Respect confidentiality
- Be discrete at all times
- Adopt safe work methods with, co workers and one self

# Competency Statements

## A – PROFESSIONAL PRACTICE

### **A-1: DEMONSTRATE CRITICAL THINKING**

---

- 1.1 Consider the patient's condition and the availability of resources to establish case priority**  
(review the work schedule, communicate with other health professionals responsible for the patient, ensure the material is available,...)
- 1.2 Consider all the elements that could influence the delivery of an exam and intervention**  
(general anatomy, topography, physiology, pathology, prescription, previous exams, contraindications, equipment, interdisciplinary professionals involved,...)
- 1.3 Adapt procedures based on elements influencing the examination and intervention**  
(prescription, patient's condition, images and reports from previous exams and related disciplines,...)
- 1.4 Optimize outcomes based on the work context, while respecting established protocols to ensure optimal quality of the services provided to patients**  
(exams, treatments, procedures...)
- 1.5 Judge the purpose and end result of the examination requested**  
(context of the examination, patient's condition, data or images obtained, ...)
- 1.6 Provide accurately all pertinent information to the physician in order to make a diagnosis**
- 1.7 Apply problem-solving strategies**
- 1.8 Apply stress management techniques**
- 1.9 Apply conflict resolution techniques**

## **A-2: DEMONSTRATE PROFESSIONAL BEHAVIOUR**

---

- 2.1 Practice in accordance with legislation, rules and current standards of practice**  
(discretion, confidentiality, professional attitude, personal appearance that inspires respect and trust, ...)
- 2.2 Act only according to an individual or collective prescription signed by a professional entitled to do so by the law**
- 2.3 Demonstrate an attitude that is compliant with the standards of professional conduct**  
(avoid private conversations, avoid giving impressions or making comments and remarks, preserve the patient's dignity, ...)
- 2.4 Show respect and sensitivity in both patient and professional interactions**  
(stress management, conflict resolution, adapting to change in the work environment, ...)
- 2.5 Prepare the required locations, equipment, material and accessories before taking the patient into the room**
- 2.6 Apply an optimal work method based on the context**  
(patient's condition, material availability, maximize efficiency, ...)
- 2.7 Contribute to self personal professional development**
- 2.8 Develop a scientific mind**  
(problem-solving, international nomenclature, curiosity, ...)
- 2.9 Contribute to the management of resources in order to ensure proper functioning of the workstation**  
(technologist, physician, assistant, material...)
- 2.10 Collaborate with other professionals by establishing good communication, by exchanging relevant information and by performing tasks in the patient's interest**
- 2.11 Provide the health professionals involved with relevant information that could be helpful in performing and interpreting the examination or procedure**
- 2.12 Help update technical protocols**
- 2.13 Participate in the elaboration of new examination techniques or research**

## **A-3: CONTRIBUTE TO TRAINING AND PRACTICAL INSTRUCTION**

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- 3.1 Explain the general operation of the department**
- 3.2 Justify examination protocols and techniques**
- 3.3 Explain the operation of the devices and equipment**
- 3.4 Participate in theoretical and practical teaching**
- 3.5 Take part in the evaluation process of the trainees**

## B – RESPECT HEALTH AND SAFETY PRINCIPLES

N.B. Respect health and safety principles that applies to each of the points described in this document.

### **B-1: MANAGE EQUIPMENT AND SITE RISKS**

---

- 1.1 Apply occupational health and safety standards and quality assurance program**  
(WHMIS, PDSP, CNESST, GHS, ...)
- 1.2 Apply the establishments plan for emergency measures**  
(emergency codes, disasters, ...)
- 1.3 Check crash cart and emergency equipment for compliance**  
(defibrillator, oxygen tanks, ...)
- 1.4 Handle biomedical, chemical, pharmaceutical waste according to established standards**
- 1.5 Report issues related to equipment and materials**  
(see Appendix 2)
- 1.6 Maintain a clean and safe work environment**
- 1.7 Check safety features**  
(emergency buttons, ...)
- 1.8 Ensure proper storage of equipment and materials**  
(probes, gel, medication, ...)
- 1.9 Ensure proper sterilization of probes**
- 1.10 Record any event related to an incident or accident**  
(file, records, AH-223 form, ...)

## **B-2: MANAGE RISKS ASSOCIATED WITH THE PATIENT**

---

- 2.1 Apply sterile work methods, if applicable**
- 2.2 Provide clinical care in relation to the examination and the procedure**
- 2.3 Apply strategies allowing to respond to emergency situations**  
(patient vital signs, CPR, agitated patient, emergency measures, ...)
- 2.4 Monitor the parameters of related devices**  
(sphygmomanometer, oxygen, automatic injector, perfusion pump saturometer, ...)
- 2.5 Apply immobilization techniques adapted to the patient's age and condition**
- 2.6 Use safe movement and transfer techniques to ensure patient safety**
- 2.7 Handle accessories in a manner that does not harm patients**  
(drip, oxygen, probes, ...)
- 2.8 Ensure patient comfort and safety**  
(immobilization, blanket, pillow, sides of stretcher, ...)
- 2.9 Maintain visual and auditory contact with the patient at all times**  
(avoid injuries, ensure clinical monitoring...)
- 2.10 Apply established measures to counter the risk of error that could be detrimental to the patient**  
(double identification, human error, mechanical defect, technological failure, ...)
- 2.11 Record data in patient file**  
(patient's condition, side effects, incident, accident, injected substances, ...)

## **B-3: APPLY PRINCIPLES OF ERGONOMICS**

---

- 3.1 Adopt an ergonomic work posture**
- 3.2 Use ergonomic movement and transfer techniques according to the patient's condition**  
(PDSP)
- 3.3 Arrange the workspace in an ergonomic and safe manner**

## **B-4: CONTROL INFECTIONS**

---

- 4.1 Safely handle pointed or sharp objects, contaminated material and biomedical waste**
- 4.2 Dispose of pointed or sharp objects, contaminated material and biomedical waste appropriately**
- 4.3 Prevent the transmission of infections at all times by applying basic infection control methods according to the established procedures (see reference document in Appendix 1) (changing bedding, washing hands, gloves, mask, asepsis, ...)**
- 4.4 Prevent the transmission of infections by applying additional precautionary practices in accordance with established procedures (see reference document in Appendix 1) (personal protective clothing, N95 mask, probe sterilization, ...)**
- 4.5 Apply preventive procedures for immunosuppressed patients**
- 4.6 Apply infection control techniques to prevent the transmission of micro-organisms for equipment and examination rooms (cleaning, disinfection of probes, ...)**
- 4.7 Prioritize actions based on infection prevention**

## C – PERFORM QUALITY CONTROL

### C-1: ASSESS EQUIPMENT PERFORMANCE

---

- 1.1 Apply personal knowledge to operate equipment properly
- 1.2 Apply quality control measures according to manufacturer's schedules or according to needs/ issues  
(phantom test, ...)
- 1.3 Communicate quality control test results to resource persons
- 1.4 Record data and test results
- 1.5 Take the necessary corrective actions as required  
(stop the procedure, advise those responsible for quality control, ...)
- 1.6 Help create and update technical files, quality control protocols and maintenance procedures
- 1.7 Perform a daily inspection of each piece of equipment
- 1.8 Perform general maintenance of the appliance  
(clean filters, keyboard, cords, monitor, ...)

### C-2: ASSESS IMAGE QUALITY

---

- 2.1 Validate information in the RIS and PACS systems  
(patient identification, letters, pictograms, ...)
- 2.2 Consider all parameters that influencing image quality  
(artifacts, gain, depth, focal zone, ...)
- 2.3 Analyze images in order to improve practice  
(causes of error)
- 2.4 Process images

## D – PATIENT MANAGEMENT

### D-1: GREET PATIENT IN A PROFESSIONAL MANNER

---

- 1.1 **Verify the patient's identity using at least two identifiers**
- 1.2 **Introduce oneself to the patient and clearly identify one's profession**
- 1.3 **Establish the patient's spoken language and use proper terminology; if needed, request the presence of an interpreter**
- 1.4 **Evaluate the patient's cognitive, physical and psychological condition**
- 1.5 **Validate patient preparation**
- 1.6 **Establish a climate of trust**  
(visual contact, auditory, active listening, ...)
- 1.7 **Respect the patient's privacy**  
(close the door to the examination room, validate the questionnaire in a private place, cover the patient, ...)
- 1.8 **Verify with the patient the accuracy of the written information on the requisition for the upcoming examination or intervention**
- 1.9 **Act in accordance with the code of ethics to avoid any behaviour leading to interpretation and implicating acts of intimacy**  
(sexual, psychological, ...)
- 1.10 **Act according to the patient's cognitive, psychological, and physical condition throughout all aspects of the patient's care**

### D-2: ANALYZE THE PATIENT'S REQUISITION AND CHART (ULTRASOUND AND MEDICAL)

---

- 2.1 **Verify the conformity of the requisition**  
(signature, relevance of the requested examination, contraindications any missing data, patient's name, date, ...)
- 2.2 **Prepare the file based on the planned examination or treatment**
- 2.3 **Verify patient's medical records (ultrasound) while respecting confidentiality**  
(Previous examinations, additional examinations, blood tests, ...)
- 2.4 **Analyze the information on the requisition pertaining to the performance of the examination or intervention**
- 2.5 **Analyze reports and previous useful images**
- 2.6 **Correct errors in the patient's chart (ultrasound) after consulting with the physician**
- 2.7 **Record information relevant to the examination**



## **D-3: EXPLAIN THE EXAMINATION TO THE PATIENT AND THE COMPANION**

---

- 3.1 Give clear explanations of the examination or intervention adapted to the patients needs for information**
- 3.2 Explain the specific purpose of the examination and intervention**
- 3.3 Explain the purpose of administering any drugs and/or contrast material, as well as any possible side effects**
- 3.4 Record the clinical history of the patient**  
(age, symptoms, medications, background, medical history questionnaire, ...)
- 3.5 Validate the contraindications to any aspect to the examination and intervention**
- 3.6 Provide instructions to ensure the examination and intervention are properly carried out**
- 3.7 Reassure the patient with regard to the role and proximity of the equipment**
- 3.8 Answer the patient's questions**
- 3.9 Validate the patient's understanding**
- 3.10 Communicate to the patient relative information regarding the follow-up of their file**
- 3.11 Have the patient remove any objects or clothing that could interfere with the quality of the examination or intervention**  
(piercings,...)
- 3.12 Ensure the patient's consent to the examination and intervention**

## **D-4: MANAGE PRIORITIES**

---

- 4.1 Establish the order of priorities and update the the examination room's work schedule**
- 4.2 Verify patient's availability and preparation**
- 4.3 Notify departments for patient preparations and the synchronization of examinations**
- 4.4 Reorganize the work schedule according to emergencies**  
(intensive care patients, emergency, ...)
- 4.5 Coordinate patient transportation**

## **D-5: ENSURE THE PATIENT FOLLOW UP**

---

- 5.1 Document observations and relevant information in the chart**
- 5.2 Communicate relevant information to other professionals involved**
- 5.3 Convey to the patient the appropriate instructions and recommendations to follow after the examination or intervention**
- 5.4 Ensure patient care throughout their presence in the ultrasound department**
- 5.5 Refer the patient to the various resources available or to appointments**  
(other examinations, information leaflets, CLSC, specialists, ...)
- 5.6 Contact the medical specialist to ensure prompt medical care of the patient for any emergency** (venous thrombus, aneurysm, ectopic pregnancy, ...)

## E – MANAGE DATA AND IMAGE RECORDING

### E-1: USE ARCHIVING SYSTEMS

---

- 1.1 Record information in patient's medical chart and patient's file  
(RIS, PACS, ...)
- 1.2 Use the modalities of the system to identify previously performed examinations and related images  
(PACS worklist, ...)
- 1.3 Add one's signature to endorse the written information and comments in a patient's chart
- 1.4 Apply established procedures in case of patient identification error related to the patient or electronic images
- 1.5 Proceed to the archiving and retrieving of images and data related to the examination
- 1.6 Verify the transfer of images to the archiving system

## F – MANAGE CONTRAST MEDIA AND MEDICATION

### **F-1: ADMINISTER CONTRAST MEDIA SUBSTANCES AND MEDICATION**

---

- 1.1 Verify the integrity of the material used for injections and identify any irregularity that could compromise the quality of the act**  
(expiry date, ...)
- 1.2 Select the specific material intended for the various procedures**  
(puncture, perfusion, injection, ...)
- 1.3 Fill out the patient's medical history questionnaire**
- 1.4 Consider pharmacological characteristics of the administered drugs and their interaction**
- 1.5 Administer contrast media and drugs according to established procedures**  
(dosage, dilution, ...)
- 1.6 Intervene in cases involving reactions to contrast media and drugs**  
(extravasation, allergies, ...)
- 1.7 Document in the medical chart all information related to the administration of contrast media and medications**  
(RIS, forms, ...)

## G – PARTICIPATE IN INTERVENTIONAL PROCEDURES

### G-1: PARTICIPATE IN PROCEDURES

---

- 1.1 Prepare the equipment and material**  
(clamps, catheters, guides, sterile tray, verify expiry dates, oxygen, suction, ...)
- 1.2 Provide the patient with the necessary care throughout the procedure**  
(dressings, securing the catheter, compression, vital signs, ...)
- 1.3 Apply asepsis principles and sterile material handling techniques**  
(sterile drapes setup, working surface, ...)
- 1.4 Assist the medical specialist**

# H – PERFORM ULTRASOUND EXAMINATIONS

## H-1: ENSURE ECHO PROTECTION

---

- 1.1 **Apply echo protection techniques and methods while maintaining the quality of the examination**  
(stop the emission of ultrasound, acoustic power, ...)

## H-2: PERFORM CARDIAC ULTRASOUND EXAMINATIONS

---

- 2.1 **Record patient and examination information**
- 2.2 **Select the program according to the type of examination**
- 2.3 **Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 2.4 **Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 2.5 **Be sure to perform a complete sweep of each organ while scanning**
- 2.6 **Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 2.7 **Compare measurement values with normal values**
- 2.8 **Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 2.9 **Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 2.10 **Identify ultrasound images using pictograms, annotations, and digital markers**
- 2.11 **Perform additional images that complement the planned protocol according to the pathophysiology**
- 2.12 **Use Doppler mode or any other mode, as needed**  
(harmonics, color, M mode, ECG, pulsed wave doppler, ...)
- 2.13 **Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 2.14 **Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 2.15 **Collaborate with the medical specialist by providing the observation notes**

## **H-3: PERFORM ABDOMINAL, PELVIC AND SURFACE ULTRASOUND EXAMINATIONS**

---

- 3.1 Record patient and examination information**
- 3.2 Select the program according to the type of examination**
- 3.3 Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 3.4 Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 3.5 Be sure to perform a complete sweep of each organ while scanning**
- 3.6 Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 3.7 Compare measurement values with normal values**
- 3.8 Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 3.9 Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 3.10 Identify ultrasound images using pictograms, annotations, and digital markers**
- 3.11 Perform additional images that complement the planned protocol according to the pathophysiology**
- 3.12 Use Doppler mode or any other mode, as needed**  
(M mode, electrocardiogram, harmonics, ...)
- 3.13 Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 3.14 Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 3.15 Collaborate with the medical specialist by providing the observation notes**

## **H-4: PERFORM OBSTETRICAL AND GYNECOLOGICAL ULTRASOUND EXAMINATIONS**

---

- 4.1 Record patient and examination information**
- 4.2 Select the program according to the type of examination**
  
- 4.3 Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 4.4 Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 4.5 Be sure to perform a complete sweep of each organ while scanning**
- 4.6 Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 4.7 Compare measurement values with normal values**
- 4.8 Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 4.9 Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 4.10 Identify ultrasound images using pictograms, annotations, and digital markers**
- 4.11 Perform additional images that complement the planned protocol according to the pathophysiology**
- 4.12 Use Doppler mode or any other mode, as needed**  
(M mode, electrocardiogram, harmonics, ...)
- 4.13 Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 4.14 Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 4.15 Collaborate with the medical specialist by providing the observation notes**

## **H-5: PERFORM MUSCULOSKELETAL ULTRASOUND EXAMINATIONS**

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- 5.1 Record patient and examination information**
- 5.2 Select the program according to the type of examination**
  
- 5.3 Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 5.4 Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 5.5 Be sure to perform a complete sweep of each organ while scanning**
- 5.6 Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 5.7 Compare measurement values with normal values**
- 5.8 Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 5.9 Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 5.10 Identify ultrasound images using pictograms, annotations, and digital markers**
- 5.11 Perform additional images that complement the planned protocol according to the pathophysiology**
- 5.12 Use Doppler mode or any other mode, as needed**  
(M mode, electrocardiogram, harmonics, ...)
- 5.13 Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 5.14 Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 5.15 Collaborate with the medical specialist by providing the observation notes**



## **H-6: PERFORM VASCULAR ULTRASOUND EXAMINATIONS**

---

- 6.1 Record patient and examination information**
- 6.2 Select the program according to the type of examination**
- 6.3 Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 6.4 Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 6.5 Be sure to perform a complete sweep of each organ while scanning**
- 6.6 Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 6.7 Compare measurement values with normal values**
- 6.8 Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 6.9 Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 6.10 Identify ultrasound images using pictograms, annotations, and digital markers**
- 6.11 Perform additional images that complement the planned protocol according to the pathophysiology**
- 6.12 Use Doppler mode or any other mode, as needed**  
(M mode, electrocardiogram, harmonics, ...)
- 6.13 Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 6.14 Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 6.15 Collaborate with the medical specialist by providing the observation notes**

## **H-7: PERFORM BREAST ULTRASOUND EXAMINATIONS**

---

- 7.1 Record patient and examination information**
- 7.2 Select the program according to the type of examination**
- 7.3 Choose the appropriate ultrasound probe based on the type of examination and anatomical structures to be demonstrated**
- 7.4 Perform images of the structures and anatomical regions of interest according to the procedure established for each examination**  
(see Appendix 3)
- 7.5 Be sure to perform a complete sweep of each organ while scanning**
- 7.6 Measure anatomical and pathological structures in a systematic and reproducible manner, according to established procedures**
- 7.7 Compare measurement values with normal values**
- 7.8 Adapt technical parameters in order to properly demonstrate each of the anatomical structures**  
(depth, gain, focus, ...)
- 7.9 Use the necessary equipment to optimize image quality**  
(necessary amount of gel, ...)
- 7.10 Identify ultrasound images using pictograms, annotations, and digital markers**
- 7.11 Perform additional images that complement the planned protocol according to the pathophysiology**
- 7.12 Use Doppler mode or any other mode, as needed**  
(M mode, electrocardiogram, harmonics, ...)
- 7.13 Complete observation notes and point out any irregularities**  
(any variants of normal, structural measurements, ...)
- 7.14 Apply image processing and reconstructions methods, as needed (3D, 4D, ...)**
- 7.15 Collaborate with the medical specialist by providing the observation notes**

# Appendix 1: Rules and Regulations

1. Act respecting medical imaging technologists, radiation oncology technologists and medical electrophysiology technologists. Document available at :  
<https://www.legisquebec.gouv.qc.ca/fr/document/lc/T-5>
2. Professional Code Document available at :  
<https://www.legisquebec.gouv.qc.ca/fr/document/lc/C-26>
3. Code of ethics of medical imaging technologists, radiation oncology and medical electrophysiology technologists. Document available at :  
<https://www.legisquebec.gouv.qc.ca/fr/document/rc/T-5,%20r.%205>
4. Règlement sur la formation continue des membres de l'Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec. Document available at : <https://www.legisquebec.gouv.qc.ca/fr/document/rc/T-5,%20r.%209>
5. Routine Practice and Additional Precautions for Preventing the transmission of Infection in Healthcare Settings. Government of Canada Canada. Document available at :  
<https://www.canada.ca/en/public-health/services/publications/diseases-conditions/routine-practices-precautions-healthcare-associated-infections.html>
6. Regulation respecting biomedical waste. Document available at :  
<http://legisquebec.gouv.qc.ca/fr/ShowDoc/cr/Q-2,%20r.%2012>

## Appendix 2: Equipment and Materials

### EQUIPMENT

---

Ultrasound machine
Multiparametric machine with multiple armbands (BP, O2 saturation, T, ...)
Stretcher
Ergonomic chair
Probe
Disinfectant
Gel
Sterile material
Probe sterilization equipment
Protective personal equipment (gowns, gloves, masks, ...)
Oxygen
Suction
Linen
Probe cover
Pillow
Storage
Computer
Etc.

# Appendix 3: List of main examinations

## ULTRASOUND EXAMINATIONS

### Anatomical parts

<b>Abdominal Ultrasound</b>	Pancreas
	Liver, hepatic veins, portal vein
	Gallbladder intra and extra hepatic bile ducts
	Kidneys and adrenals
	Aorta, inferior vena cava, other vessels
	Spleen
	Peritoneal and retroperitoneal cavity
	Abdominal wall
	Intestines
	Lymph nodes

<b>Pelvic Ultrasound</b>	Bladder
	Uterus, ovaries, Fallopian tubes
	Peritoneal and retroperitoneal cavity
	Prostate, seminal vesicles

<b>Surface Ultrasound</b>	Thyroid Gland
	Breast
	Testicles
	Skin surface
	Inguinal
	Lymph nodes

<b>Transfontanelle Ultrasound</b>	Fontanelle
	Brain

<b>Obstetrical Ultrasound 1st trimester</b>	Amniotic fluid
	Yolk sac
	Number of fetuses, membranes and gestational sacs
	Placenta, cervix, ovaries
	Heart, large vessels
	Nuchal Translucency, nasal bone
	Abdomen, umbilical cord insertion, stomach, bladder, diaphragm, lungs
	4 limbs
	Head (ventricles, choroid plexus, ...)
	Spine

<b>Obstetrical Ultrasound 2nd trimester</b>	Amniotic fluid
	Placenta, cervix, ovaries
	Heart, four cardiac chambers, large vessels
	Soft tissue of neck
	Nasal bone, nose, mouth
	Abdomen, umbilical cord, kidneys, stomach, bladder, diaphragm
	Fetal biometry (4 limbs, measurement of limbs...)
	Head (cerebellum, ventricles, choroid plexus, cisterna magna, ...)
	Spine
	Fetomaternal circulation analysis (uterine arteries, umbilical cord, ...)
	Sexe

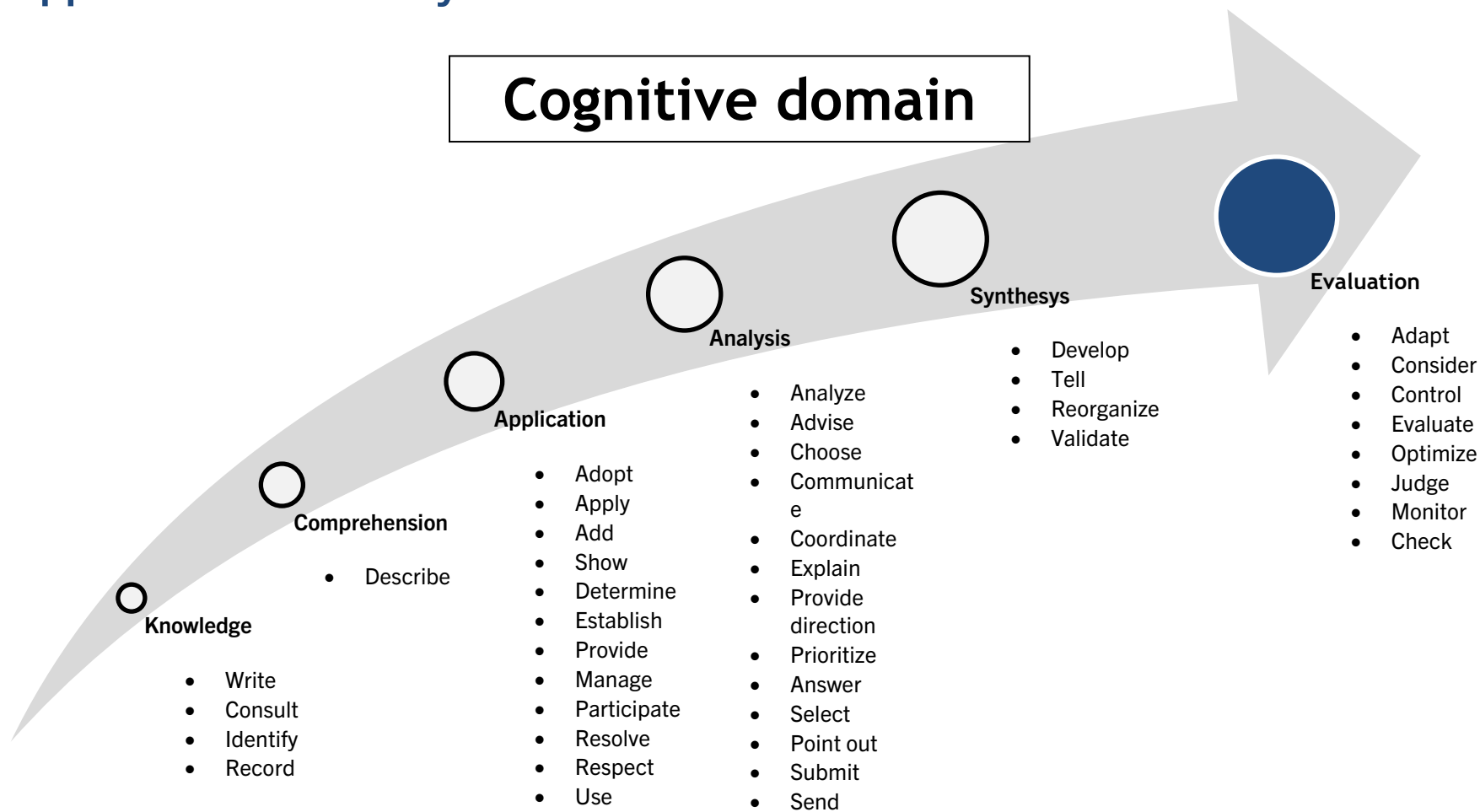
<b>Obstetrical Ultrasound 3rd trimester</b>	Amniotic fluid
	Placenta, cervix
	Heart, four cardiac chambers, large vessels
	Nasal bone, nose, mouth
	Abdomen, umbilical cord, kidneys, stomach, bladder, diaphragm
	Fetal biometry
	Head (cerebellum, ventricles, ...)
	Spine
	Fetomaternal circulation analysis (uterine arteries, umbilical cord, ...)
	Biophysical profile (fetal movements, fetal respiration, ...)
	Fetal position

<b>Cardiac and Vascular Ultrasound</b>	Carotid arteries, jugular veins
	Venous vascular: upper and lower extremities
	Arterial vascular: upper and lower extremities
	Heart chambers, heart valves, ...
	Large vessels, pulmonary vein
	Heart walls

<b>Musculoskeletal Ultrasound</b>	Articulations, synovial space, bone
	Muscles, tendons, meniscus

<b>Pleural Ultrasound</b>	Layers of pleura
	Diaphragm
	Lungs

## Appendix 4: Taxonomy





**PSYCHOMOTOR**

- Act / React
- Dispense care
- Execute
- Handle
- Manipulate
- Perform
- Position
- Proceed
- Take action
- Treat

**AFFECTIVE DOMAIN**

- Introduce oneself to patient
- Preserve
- Raise awareness
- Respect

## Appendix 5: Abbreviations

### Abdominal, pelvic and surface Ultrasound

Abbreviation and symbol	Complete word/ meaning
[ ]	Concentration
°C	Degree Celsius
♀	Female
♂	Male
A.A.A	Abdominal aortic aneurysm
A/P	Antero-posterior
AB	Abortion
Abd/ABD, abdo.	Abdomen or abdominal
abx	Antibiotic
adm	Admission
AGN	Acute glomerulonephritis
all.	Allergy
ant.	Anterior
Ao	Aorta
APN	Acute pyelonephritis
ARF/ AKI	Acute renal failure/ Acute kidney injury
Asym.	Asymmetric
ATB	Antibiotic
ATN	Acute tubular necrosis
BP	Blood pressure
BPH	Benign prostatic hyperplasia
BSO	Bilateral Salpingo-Oophorectomy
Bx	Biopsy
Ca	Cancer
Ca+	Calcium
Cath.	Catheterization, catheter

CBC	Complete blood count
CKD/CRF	Chronic kidney disease/ chronic renal failure
CLL	Chronic lymphoid leukemia
CMV	Cytomegalovirus
comp	Compression
CRP	C-reactive protein
CT	Computed tomography
DD	Dorsal decubitus
decub.	Decubitus
DIA, D	Diameter
Diab.	Diabetic
DM	Diabetes mellitus
DNT	Did not test
DOB	Date of birth
dx	Diagnosis
E. coli	Escherichia coli
EBV	Epstein-Barr virus
EGD	Esophagogastroduodenoscopy
ERCP	Endoscopic retrograde cholangiopancreatography
ETOH	Ethyl alcohol
F/U	Follow up
FH or FHx	Family history
FSH	Follicle-stimulating hormone
Fx / #	Fracture
GERD	Gastroesophageal reflux disease
GGT	Gamma-glutamyl transpeptidase
GH	Growth hormone
GI	Gastro-intestinal
Gluc., glu, BG	Glucose, blood glucose
GN	Gram-negative
GP	Gram-positive
gyn	Gynecology

HAV	Hepatitis A virus
Hb , Hgb	Hemoglobin
HBV	Hepatitis B virus
hCG	Human chorionic gonadotropin
HCT	Hematocrit
HIV	Human immunodeficiency virus
HN	Hydronephrosis
HPV	Human papillomavirus
HTN	Hypertension
Hx	History
IBD	Inflammatory bowel disease
IDDM	Insulin-dependant diabetes mellitus
inf	Inferior
intl	Internal
IP	Intraperitoneal
IUD	Intrauterine device
IV	Intravenous
L (circled)/ Lt.	Left
lat	Lateral
LBP	Lower back pain
LD	Lateral decubitus
LE	Lower extremity
LGIB	Lower gastrointestinal bleeding
LIF	Left iliac fossa
LLDP	Left lateral decubitus position
LLE	Left lower extremity
LLE	Lower limb edema
LLQ	Left lower quadrant
LMP	Last menstrual period
LN	Lymph node
LUE	Left upper extremity
Microbiol.	Microbiology

MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant staphylococcus aureus
N (circled)	Normal
N&V	Nausea and vomiting
N/A	Non applicable
NASH	Non-Alcoholic Steatohepatitis
Neg. -	Negative
NG tube	Nasogastric tube
NIDDM	Non-insulin-dependent diabetes
Nil	Nothing
NPO	Nothing by mouth
NS	Nephrotic syndrome
NSAID	Non steroidal anti-inflammatory drug
∅	None
P	Pain
PE	Physical exam / Pulmonary embolism
PHT	Portal hypertension
PID	Pelvic inflammatory disease
PMC	Pseudomembranous colitis
post	After
post.	Posterior
postop	Postoperative (after surgery)
PPE	Personal protective equipment
pre	Before
Preop	Preoperative (before surgery)
PSA	Prostate-specific antigen
PV	Per vaginam
R (circled)/ Rt.	Right
R/O	Rule out
RBC	Red blood cells
RLE	Right lower extremity
RLQ	Right lower quadrant

RSI	Repetitive strain injury
RUE	Right upper extremity
RUP or LUP	Right upper quadrant or left upper quadrant
STI/STBBI	Sexually transmitted infection/ sexually transmitted blood borne infections
Sup/ S	Superior
Sx	Surgery
Sx	Symptoms
sym.	Symmetric
T°	Temperature
TAH	Total abdominal hysterectomy
TAHBSO	Total Abdominal Hysterectomy and Bilateral Salpingo-Oophorectomy
TB	Tuberculosis
TIPS	Transhepatic Intrajugular Portosystemic Shunt
TUR	Transurethral resection
TURB	Transurethral resection of bladder
TURBT	Transurethral resection of bladder tumour
TURP	Transurethral resection of prostate
TVH	Total vaginal hysterectomy
Tx	Treatment
UE	Upper extremity
UGIB	Upper gastrointestinal bleeding
ULE	Upper limb edema
US, U/S	Ultrasound
ULE	Upper limb edema
VBAC	Vaginal birth after cesarean section
VD	Ventral Decubitus
VGE	Viral Gastroenteritis
VRE	Vancomycin resistant enterococcus
vs	Versus
WBC	White blood cell

↑	Increase
↓	Decrease

## Appendix 5 (continuation): Abbreviations

### Vascular Ultrasound

Abbreviation and symbol	Complete word / meaning
A.A.A	Abdominal aortic aneurysm
ABFB	Aortobifemoral bypass
AF	Atrial fibrillation
AGN	Acute glomerulonephritis
AI	Aortic insufficiency
AMI	Acute myocardial infarction
Ao	Aorta
APO	Acute pulmonary oedema
ARF/ AKI	Acute renal failure/ Acute kidney injury
ASCVD	Atherosclerotic Cardiovascular Disease
ASD	Atrial septal defect
ATN	Acute tubular necrosis
AVF	Arteriovenous fistula
AVR	Aortic valve replacement
Bil.	Bilateral
CABG	Coronary artery bypass graft
CAD	Coronary artery disease
Cath.	Catheterization, catheter
CKD/ CRF	Chronic kidney disease/ chronic renal failure
coll	Collateral
comp.	Compression
Coro	Coronarography
CVA	Cerebral vascular accident
CVD	Cardiovascular disease
CVI	Chronic venous insufficiency
DVT	Deep vein thrombosis



ECG	Electrocardiogram
EEG	Electroencephalogram
HF	Heart failure
HR	Heart rate
HTN	Hypertension
IABP	Intra-aortic balloon pump
IH	Intracranial hypertension
Insuf.	Insufficiency
LE	Lower extremity
LGIB	Lower gastrointestinal bleeding
LHF	Left heart failure
LIF	Left iliac fossa
LLE	Left lower extremity
LLE	Lower limb edema
LUE	Left upper extremity
LVF	Left ventricular failure
MI	Myocardial infarction
MVR	Mitral valve replacement
NASH	Non Alcoholic Steatohepatitis
NS	Nephrotic syndrome
OH	Orthostatic hypotension
PAC	Pre atrial contraction
PE	Pulmonary embolism
PHT	Portal hypertension
PPM	Permanent pacemaker
PTCA	Percutaneous transluminal coronary angioplasty
PVC	Premature ventricular contraction
PVD	Peripheral vascular disease
RHF	Right heart failure
RIF	Right iliac fossa
RLE	Right lower extremity
RSA/LSA	Right subclavian artery/ Left subclavian artery

RUE	Right upper extremity
SAH	Subarachnoid hemorrhage
SDH	Subdural hematoma
SVT	Superficial vein thrombosis
TIA	Transient ischemic attack
TVP	Temporary transvenous pacing
UE	Upper extremity
UGIB	Upper gastrointestinal bleeding
ULE	Upper limb edema
v.	Vein
vasc.	Vascular
VBI	Vertebrobasilar insufficiency
VP	Venipuncture
VTE	Venous thromboembolism

## Appendix 5 (continuation): Abbreviations

### Cardiac Ultrasound

Complete word / meaning FRENCH	Abbreviation and symbol	Complete word / meaning ENGLISH	Abbreviation and symbol
Accident ischémique transitoire	AIT	Transient ischemic attack	TIA
Accident vasculaire cérébral	AVC	Cerebral vascular accident	CVA
Aire valvulaire aortique	AVA	Aortic valve area	AVA
Aire valvulaire mitral	AVM	Mitral valve area	MVA
Anévrisme du septum interauriculaire	ASIA		
Appendice auriculaire gauche	AAG	Left atrial appendage	LAA
Aorte	Ao	Aorta	Ao
Bicuspidie aortique		Bicuspid aortic valve	BAV
Artère pulmonaire principale	APP	Main pulmonary artery	
Auriculo-ventriculaire	AV	Atrioventricular	
Battements par minute	BPM	Beats per minute	BPM
Bloc auriculo-ventriculaire	BAV	Atrioventricular block	
Bloc de branche droit	BBD	Right bundle branch block	RBBB
Bloc de branche gauche	BBG	Left bundle branch block	LBBB
Canal artériel	CA	Ductus arteriosus vs descending aorta? (Depends on context)	DA
Chirurgie de pontage coronarien (pontage coronarien ou greffe de pontage coronarien)		Coronary artery bypass graft	CABG
Cardiomyopathie dilaté	CMD	Dilated cardiomyopathy	DCM
Cardiomyopathie hypertrophique	CMP	Hypertrophic cardiomyopathy	HCM
Cardiomyopathie restrictive	CMR	Restrictive cardiomyopathy	RCM
Cardioversion électrique	CVE	Electrical cardioversion	
Chambre de chasse du ventricule droit	CCVD	Right ventricular output track	RVOT
Chambre de chasse du ventricule gauche	CCVG	Left ventricular outflow tract	LVOT
Circonflexe	CX	Circumflex coronary artery	Cx
Communication interauriculaire	CIA	Atrial septal defect	ASD

Communication interventriculaire	CIV	Ventricular septal defect	VSD
Insuffisance cardiaque congestive		Congestive heart failure	CHF
Débit pulmonaire sur débit systolique	Qp/Qs		
Défibrillateur automatique implantable	DAI	Implantable cardioverter defibrillator	ICD
Douleur rétrosternale	DRS	Chest pain	CP
Dysplasie arythmogène du ventricule droit	DADV	Arrhythmogenic Right Ventricular Dysplasia	ARVD
Échographie transoesophagienne	ETO	Transesophageal echocardiography	TEE
Échographie transthoracique	ETT	Transthoracic echocardiography	TTE
Électrocardiogramme	ECG	Electrocardiogram	EKG/ECG
Embolie pulmonaire	EP	Pulmonary embolism/ Pericardial effusion (depends on context)	PE
Endocardite infectieuse	EI	Infective endocarditis	IE
Épanchement péricardique	EP		
Excursion systolique de l'anneau tricuspide	TAPSE	Tricuspid annular plane systolic excursion	TAPSE
Extrasystole auriculaire	ESA	Atrial extrasystole	
Extrasystole ventriculaire	ESV	Ventricular extrasystole	
Fibrillation auriculaire	FA	Atrial fibrillation	AFIB
Fibrillation auriculaire chronique	FAC	Chronic atrial fibrillation	
Fibrillation auriculaire paroxystique	FAP	Paroxysmal atrial fibrillation	PAF
Fibrillation ventriculaire	FV	Ventricular fibrillation	VFIB
Flutter auriculaire	FA		
Foramen ovale perméable	FOP	Patent foramen ovale	PFO
Fraction d'éjection	FE	Ejection fraction	EF
Fraction d'éjection du ventricule gauche	FEVG	Left ventricular ejection fraction	LVEF
Gradient de pression	$\Delta P$	Pressure gradient	$\Delta P$
Hypertension artérielle	HTA		
Hypertension pulmonaire	HTP	Pulmonary hypertension	PH
Imagerie en doppler tissulaire	DTI	Tissue doppler	TDI
Infarctus du myocarde	IM	Myocardial infarction	MI
Infarctus du myocarde avec élévation du segment ST	STEMI	ST elevated myocardial infarction	STEMI

Infarctus du myocarde sans sus-décalage du segment ST	NSTEMI	Non-ST elevated myocardial infarction	NSTEMI
Insuffisance aortique	IA	Aortic insufficiency	AI
Insuffisance cardiaque	IC	Heart failure	HF
Insuffisance mitrale	IM	Mitral insufficiency	MI
Insuffisance pulmonaire	IP	Pulmonary insufficiency	PI
Insuffisance tricuspideenne	IT	Tricuspid regurgitation	TR
Interventriculaire antérieur	IVA		
Intégral temps-vitesse	ITV	Velocity time integral	VTI
Maladie coronarienne		Coronary artery disease	CAD
Maladie coronarienne		Structural heart disease	SHD
Maladie coronarienne athérosclérotique	MCAS	Coronary artery disease	CAD
Maladie pulmonaire obstructive chronique	MPOC	Chronic obstructive pulmonary disease	COPD
Récemment, nouvelle symptomatologie	Novo		
Mouvement systolique antérieur de la valve mitrale	SAM	Systolic anterior motion	SAM
Œdème aigu pulmonaire	OAP	Acute pulmonary edema	
Œdème des membres inférieurs	OMI	Lower limb edema	LLE
Oreillette droite	OD	Right atrium	RA
Oreillette gauche	OG	Left atrium	LA
Persistance du canal artériel	PCA	Patent ductus arteriosus or posterior descending artery (depends on context)	PDA
	PISA	Proximal isovelocity surface area	PISA
Pression artérielle pulmonaire	PAP		
Régurgitation mitrale	RM	Mitral regurgitation	MR
Régurgitation pulmonaire	RP	Pulmonic regurgitation	PR
Régurgitation tricuspideenne	RT	Tricuspid regurgitation	TR
Remplacement de la valve aortique	RVA	Aortic valve replacement	AVR
Remplacement de la valve mitrale	RVM	Mitral valve replacement	MVR
Septum interauriculaire	SIA		
Septum interventriculaire	SIV		
Strain global longitudinal	SGL	Strain longitudinal global	SLG
Sténose pulmonaire	SP	Pulmonary stenosis	PS
Status post	S/P		

Sténose tricuspидienne	ST	Tricuspid stenosis	TS
Surface de l'orifice régurgitant	SOR	Effective regurgitant orifice	ERO
Syndrome coronarien aigu	SCA	Acute coronary syndrome	
Tachycardie ventriculaire	TV	Ventricular tachycardia	VT
Implantation de valve aortique transcathéter	TAVI	Transcatheter aortic valve replacement/implant	TAVR/TAVI
Temps de demi-pression		Pressure half-time	PHT
Tension artérielle	TA	Blood pressure	BP
Tension veineuse centrale	TVC	Central venous pressure	CVP
Transposition des gros vaisseaux	TGV	Transposition of the great arteries	TGA
Valve aortique	VAo	Aortic valve	
Valve aortique bicuspid	,	Bicuspid aortic valve	BAV
Veine cave inférieure	VCI	Inferior vena cava	IVC
Veine pulmonaire	VP	Pulmonary vein	PV
Ventricule droit	VD	Right ventricle	RV
Ventricule gauche	VG	Left ventricle	LV
Vitesse Temps Intégrale	VTI (IVT)		
Volume régurgitant	VR	Regurgitant volume	RVol
Volume télédiastolique	VTD	End diastolic volume	EDV
Volume télésystolique	VTS	End systolic volume	ESV
Wolfe-Parkinson-White	WPW	Wolfe-Parkinson-White	WPW

## Appendix 5 (continuation): Abbreviations

### Obstetrical Ultrasound

Abbreviation and symbol	Complete word / meaning
AB	Abortion
AC	Abdominal circumference
AF	Amniotic fluid
AFI	Amniotic fluid index
AFP	Alpha fetoprotein
ART	Assisted reproduction technique or technology
ASD	Atrial septal defect
ATCD	Previous medical background history
AU	Uterine artery
AVCD	Atrioventricular canal defect
BMI	Body mass index
BPD	Biparietal diameter
BPM	Beats per minute
BPP	Biophysical profile
C/S	Cesarean section
CM	Certified Midwife
CNS	Central nervous system
CRL	Crown rump length
CTX	Contractions
DV	Ductus venosus
EBL	Estimated blood loss
EDD	Expected due date or expected date of delivery
EFW	Estimated fetal weight
EP	Ectopic pregnancy
FH	Fetal heart
FH	Fundal height
FL	Femur length
FM	Fetal movement
GDM	Gestational diabetes mellitus
GTPAL	GTPAL Gravita, term, preterm, abortion, living
HC	Head circumference
HELLP	Hemolysis, elevated liver enzymes and low platelets
HL	Humerus length
HN	Hydronephrosis
HTN	Hypertension
IUD	Intrauterine device

IUFD	Intrauterine fetal demise
IUGR	Intrauterine growth restriction (aka fetal growth restriction)
IVF	In vitro fertilization
LMP	Last menstrual period
LOF	Leakage of fluid
M/C	Miscarriage
MCA	Middle cerebral artery
NST	Prenatal nonstress test
NT	Nuchal translucency
POCS	Polycystic ovary syndrome
PROM	Premature rupture of membranes
PTL	Preterm labor
PV	Per vaginam
SFD	Small-for-dates
STI/STBBI	Sexually transmitted infection/ sexually transmitted blood borne infections
SUA	Single umbilical artery
Sx	Surgery
T13, T18 and T21	Trisomy 13, trisomy 18 et trisomy 21
TTTS	Twin-to-twin Transfusion syndrome
UA	Umbilical artery
UA	Umbilical artery doppler Umbilical artery= UA
VBAC	Vaginal birth after cesarean section
VSD	Ventricular septal defect
YS	Yolk sac

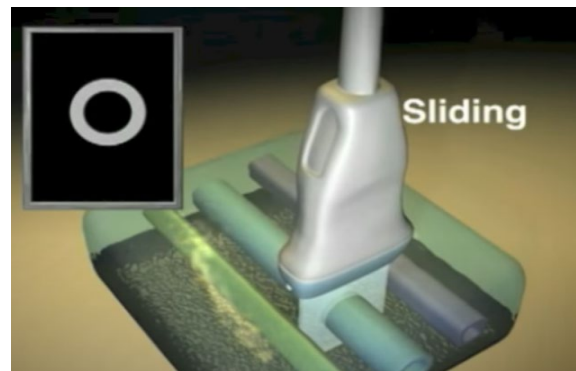
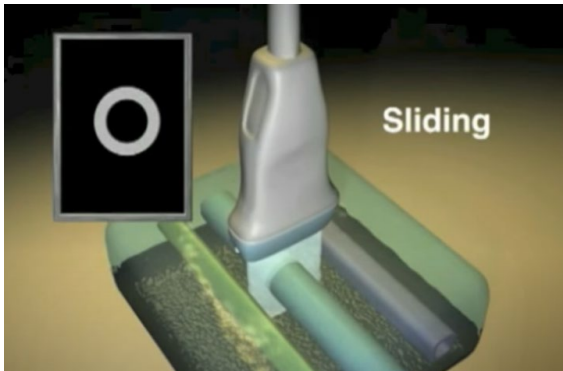


## Appendix 6 : Movements of the probe

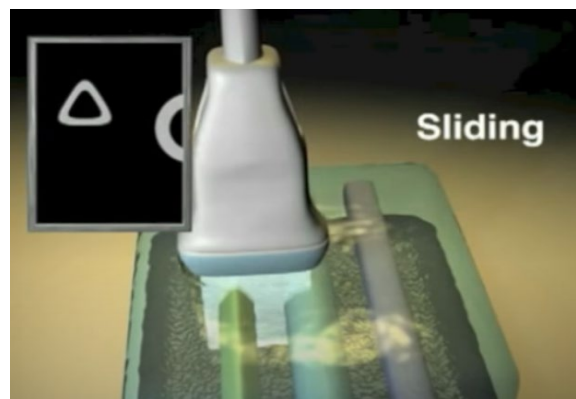
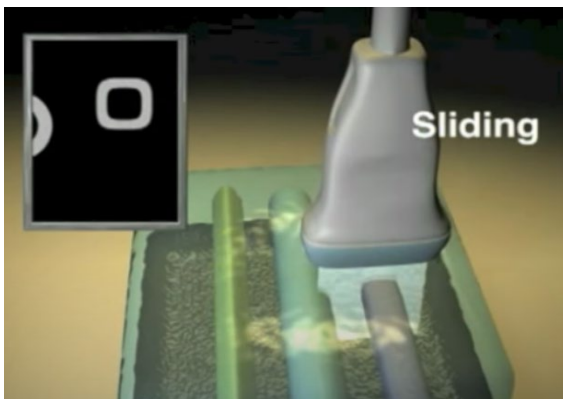
### Sliding/Displacement

Displacement of the probe perpendicular to the patient in longitudinal or transverse.

### Possible from top to bottom



### <sup>1</sup>Possible from right to left and vice-versa



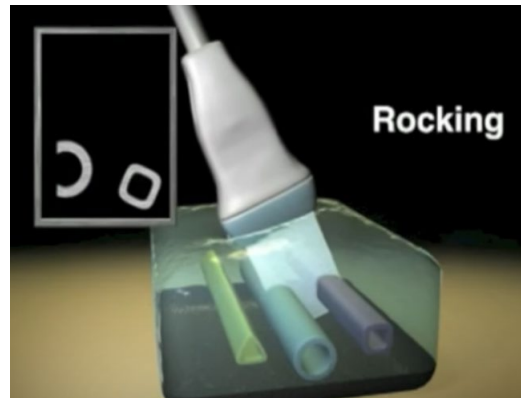
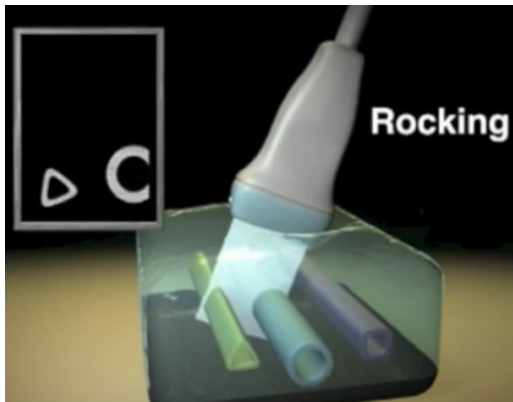
<sup>1</sup> Images are from screenshots of the following YouTube video : Buntinx, Jan (2013). *Manipuler la sonde*, vidéo accessible à l'adresse suivante : [Manipuler la sonde - YouTube](#)

### Rocking the probe from right to left and vice-versa

Allows you to sweep through a structure by leaving the probe positioned in one place. Rocking movement of the probe from right to left or vice-versa.

Possible in longitudinal and in transverse.

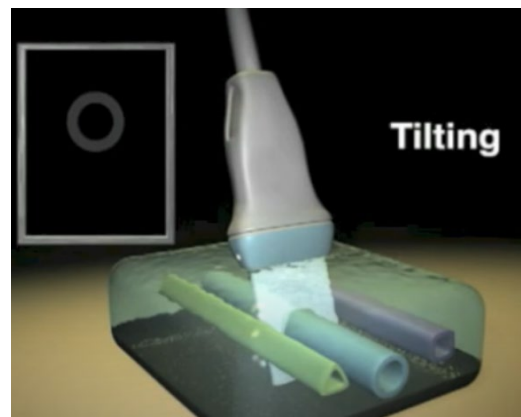
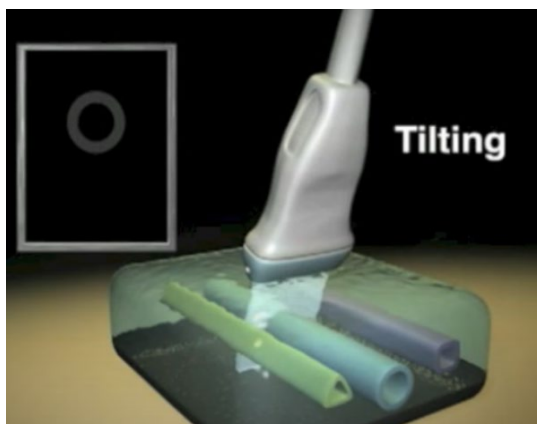
The rocking motion allows the ultrasound beam to pass below an ultrasound obstacle such as air in the intestinal loops or a rib.



### Tilting of the probe from top to bottom or vice-versa

Tilting of the probe from top to bottom or vice-versa (Cephalad or caudal when the probe is in transverse and from left to right when the probe is in longitudinal)

<sup>2</sup> Tilting allows the ultrasound beam to pass under an ultrasound obstacle such as air in the intestinal loops for the study of the aorta and ribs.



<sup>2</sup> Images are from screenshots of the following YouTube video : Buntinx, Jan (2013). *Manipuler la sonde*, vidéo accessible à l'adresse suivante : [Manipuler la sonde - YouTube](#)

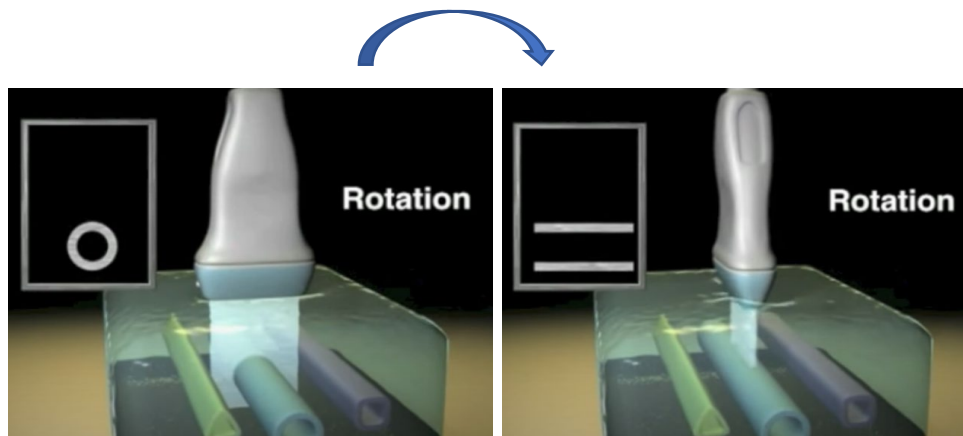
### **Probe pivot and probe rotation**

This movement makes it possible to switch from a longitudinal view to a transverse view when the pivot is 90 degrees counterclockwise.

Allows you to switch from a transverse view to a longitudinal view when the pivot is 90 degrees clockwise.

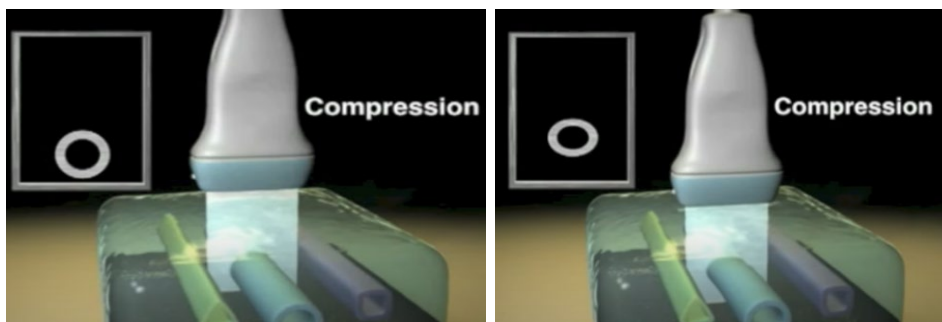
Movement of great amplitude. Small and large rotational movements allow the probe to be adjusted so that it is in the desired axis.

Pivot movements are also used to adjust a longitudinal view or a transverse view of a structure to be perfectly in line with the axis of the structure. These are small range of motion movements.



### **Compression**

Compress harder with the probe on the patient to reduce the space between the structure and the probe. This also allows for the air in the intestinal loops to be displaced and have better contact between the probe and the skin surface.



<sup>3</sup>

<sup>3</sup> Images are from screenshots of the following YouTube video : Buntinx, Jan (2013). *Manipuler la sonde*, vidéo accessible à l'adresse suivante : [Manipuler la sonde - YouTube](#)

# Glossary

**Competency:** According to the Quebec Ministry of Education, Recreation and Sport (2006), a competency is defined as “an acting knowledge based on the effective mobilization and use of a set of resources” (p.4). According to LeBoterf (2008) “To be competent is to be able to act and succeed competently in a work situation (activity to be carried out, event to be faced, problem to be solved, project to be carried out. . .). It means implementing a relevant professional practice while mobilizing an appropriate combination of resources (knowledge, skills, behaviours, reasoning methods, etc.) (p.21). According to Scallon (n.d.), “to be said to be “competent,” an individual must have done something: production, process, and process on several occasions.” It also defines competence as “the ability to mobilize a set of resources (internal (knowledge, skills, strategies, skills) and external (documents, experts, Internet, other students)) in order to deal with a complex set of situations».

[Traduction libre]

**Entry-level competency:** Skills required for a technologist entering the profession on day 1.

**Medical record:** A record containing all the patient’s medical information recorded by their physician. It includes data collected during consultations, surgeries, sampling, etc.

**Patient record (or clinical record):** The patient record or clinical record is the record that only clinicians or their team can have access. It was commonly referred to as radiology record for the radiology field or radiation oncology record for the radiation oncology field. It must include all the information described in *l’article 6 du Règlement sur la tenue des dossiers, des registres et des cabinets de consultation et sur la cessation d’exercice d’un membre de l’Ordre des technologues en imagerie médicale, en radio-oncologie et en électrophysiologie médicale du Québec.*

**Prescription:** The term “prescription” means an individual or group prescription made by a professional authorized by law, having as its subject in particular the medicines, treatments, examinations and care required, the circumstances in which they may be issued, as well as possible contraindications. (Professional Code: section 39.3).

**Interdisciplinarity:** The interaction between two or more disciplines, which can range from the simple communication of ideas to the mutual integration of the directing concepts of epistemology, terminology, methodology, processes, data and the orientation of related research and teaching (Grand dictionnaire terminologique, OQLF)

**Multidisciplinary:** Bringing together several sciences and fields in research or teaching (Grand dictionnaire terminologique, OQLF)

**Skills and attitudes:** A technologist who demonstrates a good professional attitude acts according to his or her ability to perform in all the elements necessary for competence (OTIMROEPMQ, 2010).

[Traduction libre]

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