NATIONAL COMPETENCY PROFILE

GENERALIST SONOGRAPHER
CARDIAC SONOGRAPHER
VASCULAR SONOGRAPHER

Version 7.0
October 2025

for use in the EQual™ Canada Accreditation Process, September 1, 2026

® a registered trademark of Sonography Canada / Échographie Canada

Table of Contents

Preamble 3

Purpose of the National Competency Profile 3

Entry-level Competence 4

National Competency Profile Framework 5

1. Communication 7
2. Professionalism 8
3. Assessment and Imaging 10
4. Safety 12

Glossary of Terms 13

Appendices 17

Appendix A: Examination Techniques for the Generalist Sonographer – OBSTETRICS & GYNECOLOGY 18

Appendix B: Examination Techniques for the Generalist Sonographer – ABDOMEN 22

Appendix C: Examination Techniques for the Generalist Sonographer – SUPERFICIAL STRUCTURES 24

Appendix D: Examination Techniques for the Generalist Sonographer – PERIPHERAL VEINS 25

Appendix E: Examination Techniques for the Cardiac Sonographer 26

Appendix F: Examination Techniques for the Vascular Sonographer 28

Development and Validation of the National Competency Profile 30

Acknowledgements 31

Preamble

Diagnostic medical sonographers are healthcare professionals who perform standardized ultrasound examinations of the human body. As members of an integrated healthcare team, sonographers acquire images in a variety of formats and provide a technical impression of findings to an interpreting physician. The Canadian standard of practice for sonographers was established by Sonography Canada.

Sonography Canada is the certification body for three entry-level sonographer credentials:

Canadian Registered Generalist Sonographer (CRGS®) – denotes a sonographer who specializes in imaging the abdomen, pelvis, superficial structures, peripheral veins for deep vein thrombosis (DVT), and obstetrics.

Canadian Registered Cardiac Sonographer (CRCS®) – denotes a sonographer who specializes in imaging the anatomy and function of the heart, and congenital heart conditions in adults.

Canadian Registered Vascular Sonographer (CRVS®) – denotes a sonographer who specializes in imaging the abdominal, peripheral, and extracranial vessels.

Purpose of the National Competency Profile

The National Competency Profile (NCP) outlines the knowledge, skills, and judgement expected of an entry-level sonographer. The primary purpose is to set standards for education and certification.

The NCP is designed for use in the accreditation of diagnostic medical sonography education programs. Educational programs must develop curriculum and learning outcomes that ensure graduates meet all competencies relevant to the Sonography Canada credential(s) to which the program is accredited. The NCP establishes *minimum* entry-to-practice standards; accredited educational programs may include additional competencies to meet local and regional needs, at their discretion.

The NCP may also be used by other stakeholders such as employers, physicians, provincial regulators, and government agencies.

Entry-level Competence

Competence is the ability of a professional to practice safely, effectively, and ethically. Ensuring the competence of healthcare professionals is vital for patient well-being, public safety, and the broader responsibility of promoting inclusive and equitable health outcomes.

Competence:

- evolves over the span of a person's career.
- is maintained through regular practice - knowledge and skills are retained when consistently applied.
- is context-specific and best demonstrated and measured within a specific practice setting.

Entry-level sonographers:

- Have foundational knowledge, skills, and judgement to demonstrate relevant competencies in a manner consistent with accepted professional standards, independently and within a reasonable timeframe.
- Perform essential job functions, make sound decisions, and adapt to various practice settings while adhering to professional and regulatory standards.
- Recognize their limits and seek support when they encounter situations beyond their knowledge/skills.

National Competency Profile Framework

The NCP outlines the competencies required of entry-level generalist sonographers, cardiac sonographers, and vascular sonographers.

Competency Areas

The competencies are grouped into the following four areas of sonography practice:

Area	Description
1. Communication	Sonographers use effective and adaptive communication to ensure quality professional relationships are developed with patients, families, members of the healthcare team and other stakeholders.
2. Professionalism	As professionals, sonographers are committed to excellence, ensuring that every patient receives the best possible care and is treated with respect and dignity.
3. Assessment and Imaging	Sonographers integrate knowledge, skills, and judgement during clinical procedures and examinations.
4. Safety	Sonographers maintain a safe work environment for their patients and themselves.

Structures and Scanning Techniques

The techniques that entry-level sonographer should use when examining various structures and characteristics are outlined in the appendices. Within each appendix, each technique is assigned an appropriate assessment environment. These are not intended as scanning protocols.

The following appendices are associated with each credential:

- Appendix A, B, C and D define the scope of CRGS®
- Appendix E defines the scope of CRCS®
- Appendix F defines the scope of CRVS®

Glossary of Terms

Within the competencies, terms that appear in **coloured** text are defined in the Glossary of Terms at the end of the document.

Assessment Environments

The NCP designates the *Assessment Environment* for each competency, which denotes the educational setting for assessing student proficiency: Academic (A), Simulation (S), or Clinical (C). The appropriate environment is determined by national survey responses.

Educators and student assessors are expected to have a comprehensive understanding of the NCP. Employers should be familiar with the NCP to manage entry-level expectations.

A (Academic)	Academic education takes place in a classroom or through guided study involving cognitive and/or affective learning.
S (Simulation)	Simulation involves cognitive, affective, and/or psychomotor learning in a setting that simulates a practice activity.
C (Clinical)	Clinical education involves cognitive, affective, and/or psychomotor learning where learners work directly with human patients in a setting designed to provide patient care. Learners are supervised throughout their clinical education in a manner that facilitates their development of independent clinical abilities while ensuring safe, effective and ethical patient care.

Cognitive Learning:
focuses on the acquisition of knowledge and involves understanding, analyzing, applying, and evaluating information.

Affective Learning:
involves emotions, values, attitudes, and motivation towards learning.

Psychomotor Learning:
involves learning through practice and hands-on activities related to physical movement, coordination, and motor skills.

All competencies require foundational academic knowledge before progressing to attainment of the competencies in the simulated environment or clinical environment. Therefore, these criteria represent the learning continuum expected of students in accredited programs, progressing from academic knowledge (A) to simulated practice or attainment of competencies (S) to attainment of competencies in the clinical environment (C). For competencies in the clinical environment, students should first practice in a simulated environment wherever possible.

1. Communication

1.0	COMMUNICATION	Generalist	Cardiac	Vascular
1.1	**Oral communication**			
1.1.1	Identify self to **patient**.	C	C	C
1.1.2	Explain examination procedure to patient.	C	C	C
1.1.3	Question patient to obtain relevant information regarding history and condition.	C	C	C
1.1.4	Communicate departmental reporting procedures to patient.	C	C	C
1.1.5	Respond to patient questions or concerns.	C	C	C
1.1.6	Communicate with patient's relatives and / or support persons.	C	C	C
1.1.7	Adapt communication in response to **patient factors** and situation.	C	C	C
1.1.8	Use medical terminology in oral communication with healthcare professionals.	C	C	C
1.1.9	Employ conflict resolution strategies.	S	S	S
1.2	**Written communication**			
1.2.1	Verify written, authorized directions for examination.	C	C	C
1.2.2	Record accurate and relevant medical history.	C	C	C
1.2.3	Record examination procedures and results.	C	C	C
1.2.4	Ensure that documentation is timely, accurate, concise and complete.	C	C	C
1.2.5	Use medical terminology in written communication with healthcare professionals.	C	C	C
1.3	**Non-verbal communication**			
1.3.1	Demonstrate professional and compassionate **body language**.	C	C	C
1.3.2	Respond appropriately to non-verbal behaviours.	C	C	C

2. Professionalism

2.0	PROFESSIONALISM	Generalist	Cardiac	Vascular
2.1	**Legal and ethical requirements**			
2.1.1	Adhere to relevant **provincial and federal legislation** and **regulations**.	C	C	C
2.1.2	Adhere to relevant professional **scope of practice** and **code of ethics**.	C	C	C
2.1.3	**Comply** with requirements of provincial **regulatory body**, including applicable **Standards of Practice** and sexual abuse prevention guidelines.	C	C	C
2.1.4	Describe the structure and function of sonography **regulators**, unions, and associations.	A	A	A
2.2	**Professional responsibilities**			
2.2.1	Create an environment that respects patient dignity and modesty.	C	C	C
2.2.2	Verify patient's identification.	C	C	C
2.2.3	Maintain **privacy and confidentiality**.	C	C	C
2.2.4	Obtain and ensure ongoing informed consent.	C	C	C
2.2.5	Verify that requested procedure correlates with patient's clinical history and presentation.	C	C	C
2.2.6	Evaluate patient preparation for requested examination.	C	C	C
2.2.7	Evaluate and address contraindications to procedures.	C	C	C
2.2.8	Determine the need for presence of a chaperone.	C	C	C
2.2.9	Identify and respond to urgent sonographic findings.	C	C	C
2.2.10	Identify and respond to exceptions from established protocols and procedures.	C	C	C
2.2.11	Practice within limits of personal knowledge, skill and judgement.	C	C	C
2.2.12	Ask for guidance where appropriate.	C	C	C
2.2.13	Demonstrate accountability for decisions and actions.	C	C	C
2.3	**Professional conduct**			
2.3.1	Maintain appropriate personal boundaries with patients, their families, colleagues, and the public.	C	C	C
2.3.2	Build the sonographer-patient relationship.	C	C	C
2.3.3	Provide care in a manner that is respectful of individual diversity.	C	C	C
2.3.4	Describe the **inter / intraprofessional** roles commonly encountered in the workplace.	A	A	A
2.3.5	**Collaborate** with inter / intraprofessional team members to optimize patient care.	S	S	S
2.3.6	Share knowledge with patients, colleagues, students and other members of healthcare team.	C	C	C

2.0	PROFESSIONALISM	Generalist	Cardiac	Vascular
2.3.7	Provide and receive constructive feedback in a professional manner.	C	C	C
2.3.8	Respond to and disclose **adverse events**.	A	A	A
2.3.9	Describe **professional liability**.	A	A	A
2.4	**Social responsibility**			
2.4.1	Demonstrate **culturally safe practice**.	C	C	C
2.4.2	Demonstrate **cultural humility**.	C	C	C
2.4.3	Practice **anti-racism**.	C	C	C
2.4.4	Engage in practices that integrate Indigenous knowledge to align with the calls to Action of the **Truth and Reconciliation Commission of Canada**.	C	C	C
2.4.5	Provide inclusive and safe care based on patient factors including **determinants of health**.	C	C	C
2.5	**Professional development**			
2.5.1	Engage in self-reflection to critically evaluate performance and establish goals for self-improvement.	C	C	C
2.5.2	Consolidate and apply relevant peer-reviewed research to practice.	A	A	A
2.5.3	Describe the importance of continuing professional development.	A	A	A
2.5.4	Describe current and emerging issues in health care relevant to the practice of sonography.	A	A	A
2.5.5	Describe **emerging technological developments** in the field of sonography.	A	A	A
2.5.6	Apply the **foundations of scientific inquiry**.	A	A	A
2.5.7	Identify opportunities for continuous quality improvement and/or innovations.	A	A	A

3. Assessment and Imaging

3.0	ASSESSMENT AND IMAGING	Generalist	Cardiac	Vascular
3.1	**Examination planning**			
3.1.1	Assess for signs and symptoms of disease.	C	C	C
3.1.2	Interpret history, signs & symptoms and other relevant information.	C	C	C
3.1.3	**Correlate** results from other **relevant diagnostic testing**.	A	A	A
3.1.4	Integrate knowledge of anatomy and disease processes.	C	C	C
3.1.5	Formulate sonographic scanning strategies.	C	C	C
3.2	**Operation of equipment**			
3.2.1	Apply **physics principles** in sonographic imaging.	C	C	C
3.2.2	Input patient information.	C	C	C
3.2.3	Select optimum system and transducer for examination considering patient factors, structures being examined and specific indications for examination.	C	C	C
3.2.4	Select optimal preset values.	C	C	C
3.2.5	Set up 3-lead electrocardiogram (ECG).		C	
3.2.6	Orient and manipulate transducer.	C	C	C
3.2.7	Monitor output display indices and adjust power output in accordance with "as low as reasonably achievable" (ALARA) principle.	C	C	C
3.2.8	Adjust instrument controls to **optimize** image.	C	C	C
3.2.9	Identify artifacts.	C	C	C
3.2.10	Annotate images in accordance with institutional protocols.	C	C	C
3.2.11	Use software calculation packages.	C	C	C
3.3	**Examination (see Appendices)**			
3.3.1	Perform sonographic examination of structures of interest using knowledge of sonographic principles, **instrumentation** and techniques.	C	C	C
3.3.2	Select optimal acoustic window.	C	C	C
3.3.3	Optimize patient position.	C	C	C
3.3.4	Employ breathing techniques to optimize the ultrasound examination.	C	C	C
3.3.5	**Interrogate** anatomy in required planes of section.	C	C	C
3.3.6	Evaluate images for orientation, identification, labeling, and diagnostic quality.	C	C	C
3.3.7	Acquire diagnostic images.	C	C	C

3.0	ASSESSMENT AND IMAGING	Generalist	Cardiac	Vascular
3.3.8	Recognize sonographic appearance of normal structures.	C	C	C
3.3.9	**Differentiate** artifact and normal variants from anatomic and pathologic findings.	C	C	C
3.3.10	Recognize, investigate, and document abnormal findings.	C	C	C
3.3.11	**Modify** examination based on sonographic evidence, clinical information, and patient factors.	C	C	C
3.3.12	Ensure all applicable components of examination are complete.	C	C	C
3.3.13	Recognize equipment limitations.	C	C	C
3.3.14	Recognize technical limitations.	C	C	C
3.4	**Related assessment techniques**			
3.4.1	Measure blood pressure.		S	S
3.4.2	Perform palpation of areas of interest.	C		C
3.4.3	Evaluate response to **dynamic maneuvers**.	C	C	C
3.4.4	Perform intravenous starts.		S	S
3.4.5	Describe the sonographer's role in assisting with **interventional procedures**.	A	A	A
3.4.6	Describe the sonographer's role in the application of **additional imaging techniques**.	A	A	A
3.5	**Technical analysis (see Appendices)**			
3.5.1	Produce diagnostic data documenting sonographic findings.	C	C	C
3.5.2	Describe the variables and their relationships within calculations.	A	A	A
3.5.3	Use **spatial reasoning** to interpret images.	C	C	C
3.5.4	Identify and prioritize differential findings.	C	C	C
3.5.5	Document limitations to exam quality and completeness.	C	C	C
3.5.6	Formulate a **technical impression** and communicate findings to reporting physician.	C	C	C

4. Safety

4.0	SAFETY	Generalist	Cardiac	Vascular
4.1	**Patient safety**			
4.1.1	Ensure safe patient transporting and transferring.	S	S	S
4.1.2	Ensure safe patient positioning.	C	C	C
4.1.3	Assess patient's ability to tolerate examination.	C	C	C
4.1.4	Employ **sterile technique**.	S	S	S
4.1.5	Employ best practices in **infection prevention and control**.	C	C	C
4.1.6	Assess, monitor, and respond to patient's physical and mental status throughout examination.	C	C	C
4.1.7	Perform examination in a timely manner.	C	C	C
4.1.8	Maintain awareness of patient's **accessory equipment**.	A	A	A
4.1.9	Recognize and respond to emergency situations.	S	S	S
4.1.10	Demonstrate knowledge of **Basic Life Support** training or equivalent.	S	S	S
4.2	**Self-protection**			
4.2.1	Determine need for additional personnel to assist in examination.	C	C	C
4.2.2	Employ proper body mechanics when transferring, positioning or transporting patient.	C	C	C
4.2.3	Practice **ergonomic** techniques.	C	C	C
4.2.4	Engage in practices to promote own physical and environmental safety.	C	C	C
4.2.5	Follow standardized procedures for handling and disposing of sharps, and contaminated and biohazardous materials.	A	A	A
4.3	**Safety of the work environment**			
4.3.1	Maintain clean and orderly work area.	C	C	C
4.3.2	Recognize hazardous conditions in the work area and respond.	C	C	C
4.3.3	Maintain awareness of fire and disaster plans.	A	A	A
4.3.4	Locate emergency equipment.	C	C	C
4.4	**Equipment maintenance**			
4.4.1	Describe imaging and instrumentation activities included in **quality assurance** testing.	A	A	A
4.4.2	Identify degraded instrument performance.	A	A	A
4.4.3	Describe basic trouble shooting.	A	A	A

Glossary of Terms

Term	Definition
Accessory equipment	Includes (but is not limited to) respiratory equipment (e.g., oxygen tanks, ventilators), monitoring devices, home care and hygiene equipment (e.g., catheters), mobility aids (e.g., wheelchair, walker), IV pump, etc.
Additional imaging techniques	Include (but are not limited to) strain, 3D, 4D, exercise/stress testing, physiological testing, microvascular imaging, elastography, contrast-enhanced ultrasound (CEUS), automated breast ultrasound (ABUS), etc.
Adverse events	An unintended complication that occurs during medical care that results in harm to the patient.
Anti-racism	The active process of identifying, challenging, and eliminating racism by changing practices and attitudes to promote racial equity and create inclusive environments.
Basic Life Support	Includes initial assessment, airway maintenance, and cardiopulmonary resuscitation (CPR).
Body language	Non-verbal communication where thoughts, intentions, or feelings are expressed by physical behaviors, such as facial expressions, body posture, gestures, eye movement, touch and the use of space. Professional and compassionate body language balances confidence with warmth, ensuring effective communication while showing empathy and understanding.
Code of ethics	A code of professional responsibility, which will define difficult issues, difficult decisions that will often need to be made, and provide a clear account of what behavior is considered "ethical" or "correct" or "right" in the circumstances.
Collaborate	To work jointly on an activity.
Comply	To act in accordance with and/or meet specific standards.
Correlate	To establish a mutual or reciprocal relation.
Cultural humility	A process of self-reflection to understand personal and systemic biases and to develop and maintain respectful processes and relationships based on mutual trust.
Culturally safe practice	Based on respectful engagement that recognizes and strives to address power imbalances inherent in the healthcare system. It results in an environment free of racism and discrimination, where people feel safe when receiving health care.
Determinants of health	Include income and social status, employment and working conditions, education and literacy, childhood experiences, physical environments, social supports and coping skills, healthy behaviours, access to health services, biology and genetic endowment, gender, culture, and race/racism.
Differentiate	To recognize or ascertain what makes (someone or something) different.

Term	Definition
Dynamic maneuvers	Techniques used to provoke a response (e.g., Valsalva, sniff, cough, squat, temporal tap, augment, pressure/compression). May also be referred to as "provocative maneuvers".
Ergonomics	The science of designing the workplace, keeping in mind the capabilities and limitations of the worker. A systematic ergonomics improvement process removes risk factors that lead to musculoskeletal injuries and allows for improved human performance and productivity.
Emerging technological advancements	Innovations that improve accuracy, accessibility, efficiency, and patient outcomes. They include (but are not limited to) enhanced imaging methods, artificial intelligence (AI) driven applications, remote scanning technologies, etc.
Foundations of scientific inquiry	Includes: · Critical thinking, ideation and innovation · Scientific literacy (the ability to identify, access, and critically appraise peer-reviewed literature) · The ability to describe and compare methods of scientific inquiry (quantitative, qualitative, mixed) that are applied to issues in sonography practice and/or research · Understanding of measurement properties and fundamental techniques used to assess measurement reliability and validity · Knowledge of diagnostic outcomes used in research such as sensitivity, specificity, etc.
Infection Prevention and Control	A scientific approach and practical solution designed to prevent harm caused by infection to patients and health workers. It is grounded in infectious diseases, epidemiology, social science, and health system strengthening. This includes universal precautions for patient care, and cleaning and reprocessing of equipment.
Instrumentation	Basic components of the ultrasound equipment to perform key functions.
Inter/intraprofessional	Care provided through collaboration between sonographers and other healthcare professionals (interprofessional) or through collaboration amongst sonographers (intraprofessional).
Interrogate	To examine or investigate.
Interventional procedures	Procedures used for diagnosis or treatment that involves incision; puncture; entry into a body cavity; or the use of ionizing, electromagnetic or acoustic energy.
Modify	To make partial or minor changes to (something), typically so as to improve it or to make it less extreme.
Non-verbal communication	Communication without the use of spoken language (see 'Body language').
Optimize	To make something as good or effective as possible.
Patient	Also referred to as a client.
Patient factors	Includes (but is not limited to) age, body size, language and cultural differences, cognitive and emotional status, mobility, etc.

Term	Definition
Patient safety	The prevention of errors and adverse effects to patients associated with health care.
Physics principles	Scientific principles that affect the clinical use of ultrasound, including (but not limited to): frequency, harmonics, impedance, attenuation, refraction, dynamic range, etc.
Privacy and confidentiality	National, provincial and institutional/employer laws and policies are in place which closely govern patient privacy and freedom to information for health records in all Canadian jurisdictions. It is the responsibility of the sonographer to be familiar with all laws and policies which apply to your workplace. A breach of these laws and policies may result in disciplinary action. Investigation of breaches of these laws and policies are not the responsibility of Sonography Canada and should be directed to the appropriate workplace or government authority. Links to the provincial standards can be found in the Sonography Canada Professional Practice Guidelines and Member Policies.
Professional liability	Legal obligations arising out of a professional's errors, negligent acts, or omissions during the course of the practice of his or her craft.
Provincial and federal legislation	A set of laws made by a government.
Quality assurance	The maintenance of a desired level of quality in a service or product, especially by means of attention to every stage of the process of delivery or production.
Regulation(s)	A legislative act that requires a License to work in a health profession
Regulators	A provincial public-sector agency formed or mandated under the terms of a legislative act related to a health profession to ensure compliance with the provisions of the act and in carrying out its purpose.
Relevant diagnostic testing	Includes (but is not limited to) blood work, radiography, computerized tomography, nuclear medicine, and magnetic resonance studies.
Scope of practice	Describes the procedures, actions, and processes that a healthcare practitioner is permitted to undertake in keeping within the terms of their professional license. In the case of non-regulated professions, the scope of practice is often determined by the national professional organization representing and credentialing practitioners. Sonography Canada’s Scope of Practice can be found in the Sonography Canada Professional Practice Guidelines and Member Policies.
Social responsibility	The ethical obligation of an individual to act in a way that benefits society as a whole. It involves making decisions and taking actions that promote social well-being, environmental sustainability, and ethical business practices.
Spatial reasoning	A category of reasoning skills that refers to the capacity to think about objects in three dimensions and to draw conclusions about those objects from limited information.

Term	Definition
Standards of Practice	Form the framework to measure the quality of care and service, practices considered essential to the provision of high-quality care, in conjunction with entry-to-practice competency statements, are used by educators to design education programs and practice assessments.
Sterile technique	A set of specific practices and procedures performed to make equipment and areas free from all microorganisms and to maintain that sterility.
Technical impression	A form of communication between the sonographer and the reporting physician. The full position statement can be found in the Sonography Canada Professional Practice Guidelines and Member Policies.
Truth and Reconciliation Commission of Canada	https://nctr.ca/about/history-of-the-trc/truth-and-reconciliation-commission-of-canada/

Appendices

Appendix A: Examination Techniques for the Generalist Sonographer – OBSTETRICS & GYNECOLOGY

OBESTRICS & GYNECOLOGY			TECHNIQUE		
GYN and/or OB Trimester		STRUCTURE / CHARACTERISTIC	Real time assessment	Doppler assessment	Measure (2D and/or Doppler)
A1	GYN, 1st, 2nd, 3rd	Adnexa	C		
A2	GYN	Bowel	C		
A3	GYN, 1st, 2nd, 3rd	Cervix	C		
A4	GYN, 1st	Cul-de-sacs	C		
A5	GYN, 1st	Endometrium	C	C	C
A6	GYN, 1st	Fallopian tubes	C		
A7	GYN	Muscles & ligaments	A		
A8	GYN, 1st, 2nd, 3rd	Ovaries	C	C	C
A9	GYN, 1st, 2nd, 3rd	Urinary bladder	C		
A10	GYN, 1st, 2nd, 3rd	Kidneys	C		
A11	GYN, 1st	Uterus	C	A	C
A12	GYN, 1st	Vagina	C		
A13	GYN, 3rd	Uterine vessels	A	A	
Fetal Age / Fetal Growth					
A14	1st	Mean sac diameter	C		C
A15	1st	Crown rump length	C		C
A16	2nd, 3rd	Abdominal circumference	C		C
A17	2nd, 3rd	Biparietal diameter	C		C
A18	2nd, 3rd	Femur length	C		C
A19	2nd, 3rd	Head circumference	C		C
A20	2nd, 3rd	Humerus	C		A
Fetal Head					
A21	2nd, 3rd	Anterior horn lateral ventricles	C		A
A22	2nd, 3rd	Atria of lateral ventricles	C		
A23	2nd, 3rd	Cavum septi pellucidi	C		
A24	2nd, 3rd	Cerebellum	C		C
A25	2nd, 3rd	Cerebral vessels	A	A	A

OBESTRICS & GYNECOLOGY			TECHNIQUE		
GYN and/or OB Trimester		STRUCTURE / CHARACTERISTIC	Real time assessment	Doppler assessment	Measure (2D and/or Doppler)
A26	2nd, 3rd	Choroid plexus	C		
A27	2nd, 3rd	Cisterna magna	C		C
A28	2nd, 3rd	Falx cerebri	C		
A29	2nd, 3rd	Skull	C		
A30	2nd, 3rd	Thalamus	C		
A31	2nd, 3rd	Third ventricle	C		
Fetal Spine					
A32	1st	Gross spinal development	C		
A33	2nd, 3rd	Cervical spine	C		
A34	2nd, 3rd	Thoracic spine	C		
A35	2nd, 3rd	Lumbar spine	C		
A36	2nd, 3rd	Sacral spine	C		
Fetal Face					
A37	2nd, 3rd	Facial profile	C		
A38	2nd, 3rd	Palate	A		
A39	2nd, 3rd	Mouth / lips	C		
A40	1st, 2nd, 3rd	Nasal bones	C		A
A41	2nd, 3rd	Orbits	C		A
Fetal Neck					
A42	1st	Nuchal translucency	C		A
A43	2nd, 3rd	Nuchal fold	C		C
Fetal Chest / Thorax					
A44	2nd, 3rd	Diaphragm	C		
A45	1st, 2nd, 3rd	Lungs	C		
A46	2nd, 3rd	Thoracic shape	C		
Fetal Heart					
A47	1st, 2nd, 3rd	Fetal heart rate	C		C
A48	2nd, 3rd	Situs	C		
A49	2nd, 3rd	Size	C		
A50	2nd, 3rd	Axis	C		

OBESTRICS & GYNECOLOGY			TECHNIQUE		
GYN and/or OB Trimester		STRUCTURE / CHARACTERISTIC	Real time assessment	Doppler assessment	Measure (2D and/or Doppler)
A51	2nd, 3rd	4 Chamber fetal heart	C		
A52	2nd, 3rd	Aortic arch	C		
A53	2nd, 3rd	Ductal arch	A		
A54	2nd, 3rd	Interventricular septum	C		
A55	2nd, 3rd	Outflow tracts	C		
A56	2nd, 3rd	Three vessel view	C		
Fetal Abdomen					
A57	2nd, 3rd	Adrenals	C		
A58	2nd, 3rd	Aorta	C		
A59	2nd, 3rd	Bowel	C		
A60	2nd, 3rd	Gallbladder	C		
A61	2nd, 3rd	Kidneys	C		C
A62	2nd, 3rd	Liver	C		
A63	2nd, 3rd	Renal pelvis	C		C
A64	2nd, 3rd	Spleen	C		
A65	1st, 2nd, 3rd	Stomach	C		
Umbilical Cord and Placenta					
A66	1st, 2nd, 3rd	Umbilical cord	C		
A67	1st, 2nd, 3rd	Fetal insertion	C	A	
A68	2nd, 3rd	Placental insertion	C	A	
A69	1st, 2nd, 3rd	Placenta	C		A
A70	2nd, 3rd	Umbilical cord vessels	C	C	C
Fetal Pelvis					
A71	1st, 2nd, 3rd	Urinary bladder	C		
A72	2nd, 3rd	Genitalia	C		
Fetal Skin					
A73	2nd, 3rd	Contour	C		
A74	2nd, 3rd	Thickness	C		
Fetal Musculoskeleton					
A75	1st	Gross limb development	C		

OBESTRICS & GYNECOLOGY			TECHNIQUE		
GYN and/or OB Trimester		STRUCTURE / CHARACTERISTIC	Real time assessment	Doppler assessment	Measure (2D and/or Doppler)
A76	2nd, 3rd	Feet	C		
A77	2nd, 3rd	Femurs	C		A
A78	2nd, 3rd	Fibulas	C		A
A79	2nd, 3rd	Hands	C		
A80	2nd, 3rd	Humeri	C		A
A81	2nd, 3rd	Radii	C		A
A82	2nd, 3rd	Ribs	C		
A83	2nd, 3rd	Tibias	C		A
A84	2nd, 3rd	Ulnas	C		A
Determination of:					
A85	2nd, 3rd	Amniotic fluid	C		C
A86	1st, 2nd, 3rd	Chorionicity	C		
A87	2nd, 3rd	Cervical length	C		C
A88	2nd, 3rd	Fetal lie	C		
A89	2nd, 3rd	Fetal presentation	C		
A90	1st, 2nd, 3rd	Number of Fetuses	C		
A91	2nd, 3rd	Relation of placenta to internal os	C	C	C
Other					
A92	1st	Yolk sac	C		C
A93	1st	Gestational sac	C		
A94	1st	Fetal pole	C		
A95	3rd	Fetal breathing movement	C		
A96	3rd	Fetal movement	C		
A97	3rd	Fetal tone	C		

Appendix B: Examination Techniques for the Generalist Sonographer – ABDOMEN

ABDOMEN		TECHNIQUE		
STRUCTURE / CHARACTERISTIC		Real time assessment	Doppler assessment	Measure
B1	Abdominal aorta	C	A	C
B2	Abdominal wall	C		
B3	Adrenal fossae	C		
B4	Celiac trunk	C		
B5	Chest and thorax	A		
B6	Common iliac arteries	C	A	C
B7	Common iliac veins	A	A	
B8	Inferior vena cava	C	C	
B9	Pancreas	C		
B10	Peritoneal, retroperitoneal cavities / spaces	C		
B11	Spleen	C		C
B12	Splenic vein	C	C	
B13	Superior mesenteric artery	C		
Biliary System				
B14	Gallbladder	C	A	C
B15	Common hepatic duct	C		A
B16	Common biliary duct	C		C
B17	Cystic duct	C		
B18	Pancreatic duct	C		C
B19	Intrahepatic ducts	C		
Gastrointestinal tract				
B20	Appendix	S	A	S
B21	Small bowel	A		
B22	Large bowel	A		
B23	Stomach	A		
Urinary tract				
B24	Kidneys	C	S	C
B25	Renal arteries	S	S	S
B26	Renal veins	S	S	S

ABDOMEN		TECHNIQUE		
STRUCTURE / CHARACTERISTIC		Real time assessment	Doppler assessment	Measure
B27	Ureters	C		
B28	Urinary bladder	C	S	C
B29	Prostate	C		C
B30	Seminal vesicles	C		A
Liver				
B31	Liver	C		C
B32	Hepatic veins	C	C	
B33	Hepatic artery	C	C	
B34	Portal veins	C	C	C

Appendix C: Examination Techniques for the Generalist Sonographer – SUPERFICIAL STRUCTURES

SUPERFICIAL STRUCTURES		TECHNIQUE		
STRUCTURE / CHARACTERISTIC		Real time assessment	Doppler assessment	Measure (2D and/or Doppler)
C1	Breast	A		
C2	Inguinal canal	A		
C3	Superficial tissues	S		
C4	Lymph nodes	C	A	A
Neck				
C5	Salivary glands	A		
C6	Parathyroid	A		
C7	Thyroid	C	C	C
C8	Neck compartments	C		
Scrotum				
C9	Epididymis	C	C	
C10	Testes	C	C	C
C11	Scrotal wall	C	A	A
C12	Spermatic cord	C	A	A
C13	Scrotal sac	C		
C14	Pampiniform plexus	C	A	A

Appendix D: Examination Techniques for the Generalist Sonographer – PERIPHERAL VEINS

PERIPHERAL VEINS		TECHNIQUE	
STRUCTURE / CHARACTERISTIC		Real time assessment	Doppler assessment
Peripheral veins, upper extremity, for DVT			
D1	Jugular vein	S	S
D2	Innominate vein	S	S
D3	Subclavian vein	S	S
D4	Axillary vein	S	S
D5	Brachial veins	S	S
D6	Basilic vein	S	S
D7	Cephalic vein	S	S
Peripheral veins, lower extremity, for DVT			
D8	Common femoral vein	C	C
D9	Femoral vein	C	C
D10	Popliteal vein	C	C
D11	Sapheno-femoral junction	C	C
D12	Sapheno-popliteal junction	C	C
D13	Popliteal fossa	C	
D14	Deep calf veins	C	C
D15	Inferior vena cava	A	A
D16	Iliac veins	C	C

Appendix E: Examination Techniques for the Cardiac Sonographer

CARDIAC		TECHNIQUE							
STRUCTURE / CHARACTERISTIC		2D real time assessment	Measure (2D)	M-mode	Measure - M-mode	Colour Doppler assessment	Pulsed wave (PW) Doppler assessment	Continuous wave (CW) Doppler assessment	Tissue Doppler assessment
E1	Abdominal situs	C							
E2	Cardiac position	C							
E3	Chest & thorax (adjacent, extra-cardiac)	C							
E4	Coronary vessels	A	A			A			
E5	Hepatic veins	C				C	C		
E6	Outflow tracts	C	C			C	C	C	
E7	Pulmonary veins	C				C	C		
E8	Wall layers (endo, myo, pericardium)	C	C	S	S				
E9	Wall segments	C	C	S					
Aorta									
E10	Arch & branches	C	C			C			
E11	Ascending	C	C			C		C	
E12	Descending	C	C			C	C	C	
E13	Root	C	C	S	S	C			
Atria									
E14	Left	C	C	S	S	C			
E15	Right	C	C			C			
E16	Left Atrial Appendage	C							
E17	Right Atrial Appendage	A							
Pulmonary artery									
E18	Main pulmonary artery	C	S			C	C	C	
E19	Bifurcation	C				A	A	C	
Septa									

CARDIAC		TECHNIQUE							
STRUCTURE / CHARACTERISTIC		2D real time assessment	Measure (2D)	M-mode	Measure - M-mode	Colour Doppler assessment	Pulsed wave (PW) Doppler assessment	Continuous wave (CW) Doppler assessment	Tissue Doppler assessment
E20	Atrial	C				C	C	C	
E21	Ventricular	C	C	S	S	C	C	C	
Valves									
E22	Aortic	C		C		C		C	
E23	Mitral	C	S	C		C	C	C	
E24	Mitral (annulus)	C							C
E25	Pulmonic	C				C		C	
E26	Tricuspid	C				C	C	C	
E27	Tricuspid annulus	C		C	C				C
Vena cava									
E28	Inferior	C	C	S		C			
E29	Superior	A				A			
Ventricles									
E30	Left	C	C	S	S	C			
E31	Right	C	C	S	S	C			

Appendix F: Examination Techniques for the Vascular Sonographer

VASCULAR		TECHNIQUES			
STRUCTURE / CHARACTERISTIC		Real time assessment	Measure	Doppler assessment	Indirect Testing (PPG, arterial pressure testing)
Abdominal vascular					
F1	Aorta	C	C	C	
F2	Celiac trunk	C	S	S	
F3	Hepatic artery	C	C	C	
F4	Superior mesenteric artery	C	S	S	
F5	Superior mesenteric vein	S	S	S	
F6	Inferior mesenteric artery	S	S	S	
F7	Inferior mesenteric vein	S	S	S	
F8	Renal artery	S	S	S	
F9	Renal veins	S	S	S	
F10	Hepatic veins	C	C	C	
F11	Portal veins	C	C	C	
F12	Splenic artery	S	S	S	
F13	Splenic vein	C	C	C	
F14	Inferior vena cava	C	C	C	
Cerebrovascular					
F15	Common carotid artery	C	C	C	
F16	Internal carotid artery	C	C	C	
F17	External carotid artery	C	C	C	
F18	Vertebral artery	C	C	C	
F19	Subclavian artery	C	C	C	
F20	Innominate (brachiocephalic)	C	C	C	
F21	Intracranial arteries	A	A	A	
Peripheral arteries, upper					
F22	Innominate (brachiocephalic)	S	S	S	
F23	Subclavian artery	S	S	S	
F24	Axillary artery	S	S	S	

VASCULAR		TECHNIQUES			
STRUCTURE / CHARACTERISTIC		Real time assessment	Measure	Doppler assessment	Indirect Testing (PPG, arterial pressure testing)
F25	Brachial artery	S	S	S	A
F26	Forearm arteries	S	S	S	A
Peripheral arteries, lower extremity					
F27	Iliac arteries	S	S	S	
F28	Common femoral artery	S	S	S	A
F29	Femoral artery	S	S	S	A
F30	Popliteal artery	S	S	S	A
F31	Calf arteries	S		S	A
Peripheral veins, upper extremity					
F32	Jugular vein	C		C	
F33	Innominate vein	C		C	
F34	Subclavian vein	C		C	
F35	Axillary vein	C		C	
F36	Brachial vein	C	C	C	
F37	Forearm veins	C	C	C	
F38	Basilic vein	C	C	C	
F39	Cephalic vein	C	C	C	
Peripheral veins, lower extremity					
F40	Iliac veins	C		C	
F41	Common femoral vein	C		C	
F42	Femoral vein	C		C	
F43	Popliteal vein	C		C	
F44	Calf veins	C		C	
F45	Saphenous veins	C	C	C	
F46	Perforator veins	A	A	A	
F47	Valves	S		S	
Grafts and stents					
F48	Grafts and stents	A	A	A	

Development and Validation of the National Competency Profile

The National Competency Profile (NCP) was developed and revalidated by expert committees of practitioners and educators through national surveys of practicing sonographers and employers. Revisions have been made to each version, based on user feedback and national changes in practice.

- First published in 2003
- Version 4.2, 2008
- Version 5.0, 2013
- Version 5.1, 2018
- Version 6.0, 2019
- Version 6.1, 2021
- Version 7.0, 2025

The process for the most recent revalidation is as follows:

- Consultation with accredited educational programs in Diagnostic Medical to collect feedback on version 6.1 of the NCP (suggestions for changes to specific competencies and/or their assessment environments) and practice trends/changes that should be considered when updating the NCP.
- Consultation with provincial regulators to collect input relating to regulatory requirements and standards of practice that should be considered when updating the NCP.
- Identification of proposed new competencies, wording changes for clarity, and assessment environment adjustments based upon stakeholder feedback and the knowledge and experience of Revalidation Steering Committee members.
- Development of survey criteria by the NCP Revalidation Steering Committee.
- Survey of practitioners on the frequency of use and importance of selected competencies and expectation of competence at entry-to-practice.
- Survey of employers on current and future competency requirements for entry-level sonographers.
- Preparation of an updated NCP (Version 7.0) by the NCP Revalidation Steering Committee in response to information received from surveys.
- Consultation with stakeholders on NCP Version 7.0.
- Approval of NCP Version 7.0 by the Board of Directors of Sonography Canada. Implementation timeframe of Version 7.0 was determined by education stakeholders and Sonography Canada.

Acknowledgements

Updating and revalidating the National Competency Profile (NCP) for Version 7.0 was made possible through the collaboration of numerous individuals and organizations.

A dedicated Steering Committee from across Canada provided input, direction, expertise, and guidance at each stage of the project. The Steering Committee included:

Rob Dima, PhD, DMS, CRGS
Margie MacDonald, CRGS, CRCS
Lise Melanson, CRGS
Jane Brazeau - St. Germain, DMS, CRGS, CRCS
Dustin Pendergast, CRGS
Carmen Puchyr, CRGS, CRVS, CRCS
Justin Tait, CRCS
Kelly Piasentin, PhD, project consultant

Sonography Canada would like to extend its gratitude to: (a) the sonography educational programs and regulators who provided valuable feedback used to update the competencies, (b) the organizations who provided survey input on the current and future job requirements of entry-level sonographers, and (c) the hundreds of practicing Sonographers from across Canada who responded thoughtfully to the practitioner survey. These contributions have ensured that the updated NCP is both valid and grounded in the realities of day-to-day practice.