Canadian Association of Radiologists

CAR Standard for Performing Thyroid and Parathyroid Ultrasound Examinations

The standards of the Canadian Association of Radiologists (CAR) are not rules, but are guidelines that attempt to define principles of practice that should generally produce radiological care. The physician and medical physicist may modify an existing standard as determined by the individual patient and available resources. Adherence to CAR standards will not assure a successful outcome in every situation. The standards should not be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonably directed to obtaining the same results. The standards are not intended to establish a legal standard of care or conduct, and deviation from a standard does not, in and of itself, indicate or imply that such medical practice is below an acceptable level of care. The ultimate judgment regarding the propriety of any specific procedure or course of conduct must be made by the physician and medical physicist in light of all circumstances presented by the individual situation.

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I. INTRODUCTION

These standards have been developed to provide assistance to practitioners performing ultrasound examinations of the thyroid and parathyroid glands and are based on the practice guidelines published by the American College of Radiology, and the American Institute of Ultrasound in Medicine which we acknowledge.

Ultrasound should only be performed for a valid medical reason. The lowest possible ultrasound exposure settings should be used to obtain the necessary diagnostic information. In some cases, additional and/or specialized examinations may be necessary. While it is not possible to detect every abnormality, adherence to the following standards will increase the probability of detecting many of the abnormalities that occur.

Extensive experience has shown that ultrasound is a safe and effective diagnostic procedure. While no demonstrable harmful effects of ultrasound have been demonstrated at power levels used for diagnostic studies, quality assurance dictates it is necessary to utilize this imaging technique in the most appropriate and indicated fashion, and that studies be performed by qualified and knowledgeable physicians and/or sonographers using appropriate equipment and techniques. Diagnostic ultrasound examinations should be supervised and interpreted by trained and credentialed physician imaging specialists.

II. SONOLOGIST'S CREDENTIALS CRITERIA

Diagnostic Radiologists involved in the performance, supervision and interpretation of ultrasonography must have a Fellowship or Certification in Diagnostic Radiology with the Royal College of Physicians and Surgeons of Canada and/or the Collège des médecins du Québec. Also acceptable are equivalent foreign Radiologist qualifications if the Radiologist so qualified holds an appointment in Radiology with a Canadian University. Continuing professional development must meet with the requirements of the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada and/or provincial requirements.

III. SONOGRAPHER'S CREDENTIALS CRITERIA

Sonographers should be graduates of an accredited training program or have obtained certification by the Canadian Association of Registered Diagnostic Ultrasound Professionals (CARDUP) or the American Registry of Diagnostic Medical Sonographers (ARDMS). They should be members of their national or provincial professional organization. Continuing medical education should be mandatory consistent with the requirements of the facility and CARDUP or ARDMS.

IV. DOCUMENTATION

Adequate documentation is essential for high quality patient care and such documentation should consist of a permanent record of the ultrasound examination and its interpretation. Appropriate normal and abnormal images should be recorded for each anatomical area together with appropriate measurements. Images should be appropriately labeled with the examination date, patient identification, facility identification and image location and orientation. A written report should be included with the patient's medical record.

The images must be of sufficient quality to record pertinent findings and to be used for comparison with subsequent examinations and enable third party sonologists to confirm the diagnosis.

A permanent record of each ultrasound examination and written report should be retained for a statutory period which should be consistent with clinical needs and relevant legal and local health care facility requirements. Videotape may be used as a supplement to the digital or hard copy images of an ultrasound examination. The videotape record of the ultrasound examination should be retained for the similar statutory period as the remainder of the permanent record. The videotape cassette number and counter number (name or time) must be recorded in a log book or on the printed report to allow for future access.

V. SUPERVISION AND INTERPRETATION OF ULTRASOUND EXAMINATIONS

A sonologist must be available for consultation with the sonographer on a case by case basis. Ideally the sonologist should be on-site and available to participate actively in the ultrasound examination when required. However, if not possible, then the sonologist must be available by telephone or other electronic/digital means for consultation with the sonographer and the referring physician. The sonologist should visit the facility on a regular basis to provide on-site review of ultrasound procedures and sonographer supervision.

Adequate documentation of each examination is critical. Reporting should be in accordance with the CAR Standard for Communication of Diagnostic Imaging Findings.

VI. QUALITY IMPROVEMENT PROGRAMS

Facilities should maintain and regularly update procedure manuals. Procedures should be systematically monitored and evaluated as part of the overall quality improvement program of the facility. Monitoring should include the evaluation of the accuracy of interpretation as well as the appropriateness of the examination. Incidence of complications and adverse reactions should be recorded and periodically reviewed in order to identify opportunities to improve patient care. Data should be collected in a manner which complies with the statutory and regulatory peer review procedures in order to protect confidentiality of the peer review data.

VII. EQUIPMENT

Thyroid and parathyroid studies should be conducted with a real time scanner, preferably using linear or curved linear transducers. The transducer should be adjusted to operate at the highest clinically appropriate frequency. With modern equipment these frequencies are usually 10MHz or greater. A lower frequency transducer may be needed in some patients for depth penetration. Resolution should be of sufficient quality to discern the internal characteristics of detectable lesions.

Doppler frequencies used should be the highest possible to optimize resolution and flow detection. With modern equipment, Doppler frequencies range from 5 to 10MHz. The total ultrasound exposure should be kept as low as reasonably achievable (ALARA principle).

VIII. SONOGRAPHIC TECHNIQUE

A. THYROID

The examination should be performed with the neck hyperextended. The right and left lobes of the thyroid should be imaged in at least two projections, longitudinal and transverse. Transverse views of the thyroid should include images of the superior, mid and inferior portions of the right and left lobes. Longitudinal images should include medial, mid and lateral portions of each lobe. The thyroid isthmus should be imaged in at least a transverse plane. The size of each thyroid lobe should be recorded, preferably in three dimensions.

Visualized thyroid abnormalities should be documented and measured preferably in three dimensions. The location, size, internal characteristics and number of abnormalities should be recorded. Abnormalities of the adjacent soft tissues such as enlarged lymph nodes, thrombosed veins, etc. should be documented.

Whenever possible, comparison should be made with other appropriate imaging studies. Spectral and colour and/or power Doppler is useful to evaluate the vascularity of the thyroid gland and of localized masses. Colour Doppler can distinguish prominent thyroid vessels from cystic masses and may be used to identify vascular abnormalities adjacent to the thyroid.

Sonographic guidance may be used to aspirate or biopsy thyroid lesions or other neck masses.

B. PARATHYROID

Examination for suspected parathyroid enlargement should include images in the region of the anticipated location of the parathyroid glands. The examination should be performed with the neck hyperextended and should include longitudinal and transverse images from the carotid arteries to the midline bilaterally and extending from the hyoid bones superiorly to the thoracic inlet inferiorly. Graded compression may be helpful in identifying deep-lying adenomas. As parathyroid glands may be located below the clavicles in the lower neck and upper mediastinum, it may be helpful to have the patient swallow during the examination with real-time observation. The upper mediastinum may be imaged with an appropriate transducer by angling under the sternum from the sternal notch.

Although the normal parathyroid glands usually are not visualized using currently available sonographic technology, enlarged parathyroid glands in the neck may be visualized. When visualized, the size, number, and location of the parathyroid glands should be documented. Measurements of the parathyroid gland should be made in at least two and preferably three dimensions.

Whenever possible, comparison should be made with other appropriate imaging studies. Spectral and colour and/or power Doppler may be helpful.

Sonographic guidance may be used to aspirate or biopsy parathyroid glands or to direct ablative interventional procedures.

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