CAR Standards for Ultrasound Examination of the Female Pelvis

Approved: March 2002

These Standards have been developed by the Expert Advisory Panel on Ultrasound chaired by Dr. Shia Salem and presented for adoption to Council by Dr. Dónal Downey. Members: M. Atri, M.D., J. Buckley, M.D., B. Capusten, M.D., P. Cooperberg, M.D., D. Downey , M.D., K. Fong, M.D., C. Levi, M.D., V. Nicolet, M.D., Shia Salem, M.D., E. Sauerbrei, M.D., Stephanie Wilson, M.D., W. Zaleski, M.D.

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 high-quality 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.

I. INTRODUCTION

These standards have been developed to provide assistance to practitioners performing ultrasound examinations and are based on the standards published by the American College of Radiology and the American Institute of Ultrasound in Medicine. 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 maximize the probability of detecting most of the abnormalities that occur.

Diagnostic Ultrasound is an established, effective, diagnostic imaging technique which employs the use of high frequency ultrasound waves for both Imaging and Doppler examinations.

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

Physicians involved in the performance, supervision and interpretation of ultrasonography should be Diagnostic Radiologists and 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.

As new imaging modalities and interventional techniques are developed additional clinical training, under supervision and with proper documentation, should be obtained before radiologists interpret or perform such examinations or procedures independently. Such additional training must meet with pertinent provincial/regional regulations. Continuing professional development must meet with the requirements of the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

III. SONOGRAPHER'S CREDENTIALS CRITERIA

Sonographers should be graduates of an accredited School of Sonography or have obtained certification by the American Registry of Diagnostic Medical Sonographers (ARDMS) or the Canadian Association of Registered Diagnostic Ultrasound Professionals (CARDUP). They should be members of their national or provincial

professional organization. Continuing medical education should be mandatory consistent with the requirements of ARDMS or CARDUP.

CARDUP will have a national exam process for sonographers in place by 2004. At that time this will become the accepted standard for sonographers. As an interim measure, individual consideration of training and qualifications by a Task Force consisting of members of relevant societies can be recommended for all those whose training does not fall within appropriate guidelines.

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 labelled with the examination date, patient identification and if appropriate image location and orientation. A written report should be included with the patient's medical record.

A permanent record of the ultrasound images and written report shall be retained. 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. The permanent record of each ultrasound examination 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 a useful supplement to the permanent record 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.

It is recognized however that the geographic realities in Canada do not permit the presence of an on-site sonologist in all locations. Adequate documentation of each examination is critical. A videotape record may be useful as an adjunct to the hard copy images in difficult cases. Despite the geographic isolation of a community the reports must be timely. Furthermore, the sonologist must be available by telephone 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.

VI. QUALITY IMPROVEMENT PROGRAMS

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.

1. EQUIPMENT

Sonography of the female pelvis should be performed with a real time scanner preferably using sector or curved linear transducers. The transducer or scanner should be adjusted to operate at the highest clinical appropriate frequency, realizing there is a trade-off between resolution and beam penetration. Studies performed from the anterior abdominal wall can usually use frequencies of 3.5 MHZ or higher while scans performed from the vagina should use frequencies of 5 MHZ or higher.

2. CARE OF THE EQUIPMENT

All probes should be cleaned after each patient examination. Vaginal probes must be covered by a protective sheath prior to insertion. Following the examination, the sheath should be disposed and the probe cleaned in an antimicrobial solution. The type of solution and amount of time for cleaning depends on manufacturer and infectious disease recommendations.

3. TECHNIQUE

A. GENERAL PELVIC PREPARATION

All relevant structures should be identified and recorded by the abdominal and/or vaginal approach. In many cases, both may be necessary. For a pelvic sonogram performed from the abdominal wall, the patient's urinary bladder should be adequately distended. For a vaginal sonogram, the urinary bladder is preferably empty. The vaginal transducer may be introduced by the patient, sonographer or sonologist. It is highly recommended that a woman be present in the examining room during vaginal sonography, either as an examiner or a chaperone.

B. UTERUS

Using the vagina and uterus as anatomical landmarks, pelvic structures are evaluated individually. The vagina should be imaged as a landmark for the cervix and lower uterine segment.

In evaluating the uterus, the following should be documented: a) uterine size, shape and orientation b) the endometrium c) the myometrium and d) the cervix.

Uterine length is evaluated in long axis from the fundus to the cervix. The depth of the uterus (anteroposterior dimension) is measured in the same long axis from its anterior to posterior walls, perpendicular to its long axis. The width is measured on the transaxial or coronal view.

The endometrium should be assessed for thickness, echogenicity, focal abnormality and the presence of fluid or mass in the endometrial cavity. Assessment of the endometrium should allow for normal cyclical variations. The endometrial thickness measurement is measured anterior to posterior in the sagittal plane and should include both layers. Any fluid within the endometrial cavity should be excluded from this measurement.
The myometrium should be assessed for morphology, including contour changes, echogenicity and masses. Abnormalities of the uterus and cervix should be documented.

C. ADNEXA (OVARIES AND FALLOPIAN TUBES)

An attempt should be made to identify the ovaries first since they can serve as the major point of reference for adnexal structures. Frequently the ovaries are situated anterior to the internal iliac (hypogastric) vessels, which serve as landmarks for their identification. Size, shape, contour and echogenicity of the ovaries should be assessed together with their position relative to the uterus. The ovarian size can be determined by measuring the length in long axis with with the anteroposterior dimension measured perpendicular to the length. The ovarian width is measured in the transaxial or coronal view. A volume can be calculated. It is recognized that the ovaries may not be identifiable in some women.
The normal fallopian tubes are not commonly identified. This region should be surveyed for abnormalities, especially fluid filled or distended tubular structures that may represent dilated fallopian tubes.

The size and echo pattern (cystic, solid or complex) of adnexal masses should be recorded, as well as their relationship to the ovaries and uterus. Doppler or colour Doppler ultrasound may be useful in selected cases to identify the vascular nature of pelvic structures.

D. CUL-DE-SAC

The cul-de-sac should be evaluated for the presence of free fluid or mass and the dimensions and morphology of any abnormality recorded.