Revised 2011 (Resolution 7)*

ACR–SPR–SRU PRACTICE GUIDELINE FOR PERFORMING AND INTERPRETING DIAGNOSTIC ULTRASOUND EXAMINATIONS

PREAMBLE

These guidelines are an educational tool designed to assist practitioners in providing appropriate radiation oncology care for patients. They are not inflexible rules or requirements of practice and are not intended, nor should they be used, to establish a legal standard of care. For these reasons and those set forth below, the American College of Radiology cautions against the use of these guidelines in litigation in which the clinical decisions of a practitioner are called into question.

The ultimate judgment regarding the propriety of any specific procedure or course of action must be made by the physician or medical physicist in light of all the circumstances presented. Thus, an approach that differs from the guidelines, standing alone, does not necessarily imply that the approach was below the standard of care. To the contrary, a conscientious practitioner may responsibly adopt a course of action different from that set forth in the guidelines when, in the reasonable judgment of the practitioner, such course of action is indicated by the condition of the patient, limitations of available resources, or advances in knowledge or technology subsequent to publication of the guidelines. However, a practitioner who employs an approach substantially different from these guidelines is advised to document in the patient record information sufficient to explain the approach taken.

The practice of medicine involves not only the science, but also the art of dealing with the prevention, diagnosis, alleviation, and treatment of disease. The variety and complexity of human conditions make it impossible to always reach the most appropriate diagnosis or to predict with certainty a particular response to treatment.

Therefore, it should be recognized that adherence to these guidelines will not assure an accurate diagnosis or a successful outcome. All that should be expected is that the practitioner will follow a reasonable course of action based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. The sole purpose of these guidelines is to assist practitioners in achieving this objective.

I. INTRODUCTION

This guideline was revised collaboratively by the American College of Radiology (ACR), the Society for Pediatric Radiology (SPR), and the Society of Radiologists in Ultrasound (SRU).

Diagnostic ultrasound is an established, effective diagnostic imaging technique that uses high-frequency sound waves for both anatomic (grayscale) and Color/Power/Spectral Doppler (anatomic and hemodynamic) evaluation. The applications of diagnostic ultrasound technology include, but are not limited to:

1. Obstetrical and gynecological ultrasound.
2. Thoracic, abdominal, and pelvic ultrasound.
3. Renal and retroperitoneal ultrasound.
4. Vascular ultrasound (carotid, abdominal, intracranial, peripheral arterial, and peripheral venous studies, including pulsed, power, and color Doppler).
5. Neurosonography.
6. Guidance of interventional biopsy and therapeutic procedures.
7. Intraoperative ultrasound.
8. Evaluation of superficial structures such as breast, thyroid, testicle, skin.

9. Endoluminal ultrasound.
10. Ophthalmologic ultrasound.
11. Echocardiography.
12. Musculoskeletal ultrasound.

Extensive experience has shown that ultrasound is a safe and effective diagnostic procedure. While no harmful effects of ultrasound have been demonstrated at power levels used for diagnostic studies, quality assurance dictates that it is necessary to use 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 performed only when there is a valid medical reason. The lowest possible ultrasonic power settings should be used to gain the necessary diagnostic information. These guidelines apply to all ultrasound examinations in all clinical situations. Diagnostic ultrasound examinations should be supervised and interpreted by trained and qualified physicians.

II. QUALIFICATIONS AND RESPONSIBILITIES OF PERSONNEL

A. Physician

Physicians who supervise, perform, and/or interpret diagnostic ultrasound examinations should be licensed medical practitioners who have a thorough understanding of the indications for ultrasound examinations as well as a familiarity with the basic physical principles and limitations of the technology of ultrasound imaging. They should be familiar with alternative and complementary imaging and diagnostic procedures and should be capable of correlating the results of these other procedures with the sonographic findings. They should have an understanding of ultrasound technology and instrumentation, ultrasound power output, equipment calibration, and safety. Physicians responsible for diagnostic ultrasound examinations should be able to demonstrate familiarity with the anatomy (including normal growth and development), physiology, and pathophysiology of those organs or anatomic areas that are being examined. These physicians should provide evidence of the training and competence needed to perform diagnostic ultrasound examinations successfully.

Physicians performing and/or interpreting diagnostic ultrasound examinations should meet at least one of the following criteria:

> Certification in Radiology or Diagnostic Radiology by the American Board of Radiology, the American Osteopathic Board of Radiology, the Royal College of Physicians and Surgeons of Canada, or the Collège des Médecins du Québec, and involvement with the supervision and/or performance, interpretation, and reporting of 300 ultrasound examinations within the last 36 months.[1]
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> or
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> Completion of a diagnostic radiology residency program approved by the Accreditation Council for Graduate Medical Education (ACGME), the Royal College of Physicians and Surgeons of Canada (RCPSC), the Collège des Médecins du Québec, or the American Osteopathic Association (AOA) to include involvement with the supervision and/or performance, interpretation, and reporting of 500 ultrasound examinations in the past 36 months.[1]
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> or
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> Physicians not board certified in radiology or not trained in a diagnostic radiology residency program, and who assume these responsibilities for sonographic imaging exclusively in a specific anatomical area should meet the following criteria: Completion of an ACGME approved residency program in specialty practice plus 200 hours of Category I CME in the subspecialty where ultrasound reading occurs; and supervision and/or performance, interpretation, and reporting of 500 cases relative to each subspecialty area interpreted (e.g., pelvic, obstetrical, breast, thyroid, vascular) during the past 36 months in a supervised situation.

The physicians should be familiar with interpretation and documentation in accordance with the ACR Practice Guideline for Communication of Diagnostic Imaging Findings.

Maintenance of Competence

All physicians performing ultrasound examinations should demonstrate evidence of continuing competence in the interpretation and reporting of those examinations. If competence is assured primarily based on continuing experience, a minimum of 100 examinations per year is recommended in order to maintain the physician's skills. Continued competency should be monitored for technical success, accuracy of interpretation, and appropriateness of evaluation.

Continuing Medical Education

The physician's continuing education should be in accordance with the ACR Practice Guideline for Continuing Medical Education (CME) and should include CME in ultrasonography as is appropriate to his/her practice.

[1]Completion of an accredited radiology residency in the past 24 months will be presumed to be satisfactory experience for the performance, reporting, and interpreting requirement.

B. Diagnostic Medical Sonographer

When a sonographer performs the examination, that person should be qualified by appropriate training to do so. This qualification can be demonstrated by certification or eligibility for certification by a nationally recognized certifying body (e.g., ARDMS or ARRT). The sonographer should have ongoing continuing education in ultrasound.

III. SPECIFICATIONS OF THE EXAMINATION

The written or electronic request for ultrasound examinations should provide sufficient information to demonstrate the medical necessity of the examination and allow for its proper performance and interpretation.

Documentation that satisfies medical necessity includes 1) signs and symptoms and/or 2) relevant history (including known diagnoses). Additional information regarding the specific reason for the examination or a provisional diagnosis would be helpful and may at times be needed to allow for the proper performance and interpretation of the examination.

The request for the examination must be originated by a physician or other appropriately licensed health care provider. The accompanying clinical information should be provided by a physician or other appropriately licensed health care provider familiar with the patient's clinical problem or question and consistent with the state's scope of practice requirements. (ACR Resolution 35, adopted in 2006)

Quality may be enhanced by having the ultrasound practice undergo an accreditation process.

IV. DOCUMENTATION

Adequate documentation is essential for high-quality patient care. There should be a permanent record of the ultrasound examination and its interpretation. Comparison with prior relevant imaging studies may prove helpful. Images of all appropriate areas, both normal and abnormal, should be recorded. Variations from normal size should generally be accompanied by measurements. The initials of the operator should be accessible on the images or electronically on PACS. Images should be labeled with the patient identification, facility identification, examination date, and image orientation. An official interpretation (final report) of the ultrasound examination should be included in the patient's medical record. Retention of the ultrasound examination images should be based on clinical need and relevant legal and local health care facility requirements.

Reporting should be in accordance with the ACR Practice Guideline for Communication of Diagnostic Imaging Findings.

V. QUALITY CONTROL AND IMPROVEMENT, SAFETY, INFECTION CONTROL, AND PATIENT EDUCATION

Policies and procedures related to quality, patient education, infection control, and safety should be developed and implemented in accordance with the ACR Policy on Quality Control and Improvement, Safety, Infection Control, and Patient Education appearing under the heading *Position Statement on QC & Improvement, Safety, Infection Control, and Patient Education* on the ACR web site (http://www.acr.org/guidelines).

Equipment performance monitoring should be in accordance with the ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Real Time Ultrasound Equipment.

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Collaborative Committee – members represent their societies in the initial and final revision of this guideline

ACR
Robert D. Harris, MD, MPH, FACR, Chair
Helena Gabriel, MD
Marta Hernanz-Schulman, MD, FACR
Robert M. Sinow, MD

SPR
Caroline T. Carrico, MD
Lynn A. Fordham, MD
Martha M. Munden, MD

SRU
Teresita L. Angtuaco, MD, FACR
Barbara S. Hertzberg, MD, FACR
Jill E. Langer, MD

Guidelines and Standards Committee – Pediatric – ACR Committee responsible for sponsoring the draft through the process
Marta Hernanz-Schulman, MD, FACR, Chair
Sara J. Abramson, MD, FACR
Taylor Chung, MD

Brian D. Coley, MD
Kristin L. Crisci, MD
Wendy Ellis, MD
Eric N. Faerber, MD, FACR
Kate A. Feinstein, MD, FACR
Lynn A. Fordham, MD
S. Bruce Greenberg, MD
J. Herman Kan, MD
Beverley Newman, MB, BCh, BSc, FACR
Marguerite T. Parisi, MD
Sudha P. Singh, MB, BS
Donald P. Frush, MD, FACR, Chair, Pediatric Commission

Guidelines and Standards Committee – Ultrasound – ACR Committee responsible for sponsoring the draft through the process

Mary C. Frates, MD, FACR, Chair
Debra L. Acord, MD
Sandra O. Allison, MD
Marcela Bohm-Velez, MD, FACR
Helena Gabriel, MD
Ruth B. Goldstein, MD
Robert D. Harris, MD, MPH, FACR
Beverly E. Hashimoto, MD, FACR
Leann E. Linam, MD
Laurence Needleman, MD, FACR
Maitray D. Patel, MD
Michelle L. Robbin, MD, FACR
Robert M. Sinow, MD
Maryellen R. M. Sun, MD
Deborah Levine, MD, FACR, Chair, Commission

Comments Reconciliation Committee
Beverly G. Coleman, MD, FACR, Chair
Teresita L. Angtuaco, MD, FACR
Kimberly E. Applegate, MD, MS, FACR
Douglas L. Brown, MD
Caroline T. Carrico, MD
Howard B. Fleishon, MD, MMM, FACR
Lynn A. Fordham, MD
Mary C. Frates, MD, FACR
Donald P. Frush, MD, FACR
Helena Gabriel, MD
Robert D. Harris, MD, MPH, FACR
Marta Hernanz-Schulman, MD, FACR
Barbara S. Hertzberg, MD, FACR
Alan D. Kaye, MD, FACR
Jill E. Langer, MD
Paul A. Larson, MD, FACR
Deborah Levine, MD, FACR
Martha M. Munden, MD
Laurence Needleman, MD, FACR
Robert M. Sinow, MD
Morlie L. Wang, MD

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