Ultrasound Accreditation

Program Requirements

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Revisions

Date	Page Number	Description of Revisions
6/1/2014	7	Documentation of quality control (QC) is required as part of the application process. All facilities applying for accreditation must comply with the minimum frequencies listed below. As part of the accreditation application, facilities must demonstrate compliance with the ACR requirements for QC.
7/27/2015	4	Added Radiologist qualifications for those who graduated residency after June 30, 2015
7/27/2015	12	Updated exam selections and number of exams to be submitted. A shoulder has been added under the General Module and a Pediatric module was added.

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Overview

The Ultrasound Accreditation Program involves the acquisition of clinical images, submission of relevant physician reports corresponding to clinical images submitted, and quality control documentation. Sites must apply for accreditation in all categories of ultrasound services this site provides (e.g., OB, General, Gynecological, and/or Vascular).

Mandatory Accreditation Time Requirements

Submission of all accreditation material is subject to mandatory timelines. Detailed information about specific time requirements is located in the *Overview for the Diagnostic Modality Accreditation Program*. Please read and be familiar with these requirements.

Personnel Qualifications

All interpreting physicians and technologists working in ultrasound (including part-time and locum tenens staff) must ***meet and document*** specific requirements in order for their facility to be accredited by the ACR.

The continuing education and continuing experience requirements are based on previous full calendar years. For example, if a site renews their accreditation in July 2014, the physicians at that site must have met the full requirement for continuing education from January 1, 2011 to December 31, 2013. Likewise, they must have met the full continuing experience requirements from January 1, 2011 to December 31, 2013. If they did not meet these requirements in the given timeframes, the ACR will accept continuing education credits or continuing experience obtained in 2014.

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Physician Qualifications

The physician must be a licensed medical practitioner with a thorough understanding of indications for ultrasound examinations and be familiar with the basic physical principles and limitations of the technology and ***meet at least one*** of the four initial qualifications criteria.

Requirements for all Physicians Supervising and/or Interpreting Ultrasound Examinations		
Qualifications	**Radiologists/Physicians**	**Physician (without formal fellowship or postgraduate training)**
Initial	• 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. • For Radiologists graduating from Residency after June 30, 2014, board certified or board eligible as defined by the American Board of Radiology. OR • Completion of an approved residency program including three months of training supervised by qualified individuals, and involvement with 500 ultrasound examinations, including a broad spectrum of uses. The physician should have successfully passed written and oral board certification examinations, including sections related to diagnostic ultrasound. OR • If residency did not include ultrasound, the physician must have had appropriate fellowship or postgraduate training including involvement with performance and interpretation of at least 500 ultrasound examinations, including a broad spectrum of ultrasound uses under the direct supervision of a qualified physician.[1] OR • Physicians trained prior to 1982 must have performed and interpreted ultrasound examinations for at least 10 years, generating film or other hard-copy records for studies performed, along with a written report. **Occasional Readers** Occasional readers who are providing imaging services to and for the practice readers are not required to meet the	• Two years of ultrasound experience during which at least 500 ultrasound examinations were performed or supervised and interpreted.[1]

[1] The supervising interpreting physician reviews, discusses, and confirms the diagnosis of the physician being supervised. The supervising interpreting physician does not have to be present at the time of initial interpretation. However, the supervising physician must review and, if necessary, correct the final interpretation. Supervision may also be accomplished through a formal course that includes a lecture format in addition to all of the following: 1) a database of previously performed and interpreted cases, 2) an assessment system traceable to the individual participant, and 3) direct feedback regarding the responses. Examples of suitable assessment systems are an audience response system, a viewbox or monitor based program or an individual CD-ROM or web-based instruction system.

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	interpreting physician initial qualifications or continuing experience requirements. However, the reads of all occasional readers combined should not exceed 5% of the total volume of reads per practice and per modality. There must be an active written review process in place at the institution for occasional readers based on each institution's credentialing requirements. Validation of this process will take place during any site visit by the ACR.	
Continuing Experience	Upon renewal, physicians reading ultrasound must meet the following: Currently meets the Maintenance of Certification (MOC) in Radiology (See ABR MOC) **OR** Read a minimum of 200 studies/3 years in ultrasound[2] **OR** For physicians reading organ system specific exams (i.e., body, abdominal, musculoskeletal, head) across multiple modalities they must read a minimum of 60 organ system specific ultrasound exams in 36 months. However, they must read a total of 200 cross-sectional imaging (MRI, CT, PET/CT and ultrasound) studies over the prior 36 months.	
Continuing Education	Upon renewal, must meet one of the following: 1. Currently meets the Maintenance of Certification (MOC) requirements for the ABR (See ABR MOC) **OR** 2. Completes 150 hours (that includes 75 hours of Category 1 CME) in the prior 36 months pertinent to the physician's practice patterns (See ACR Guideline) **OR** 3. Completes 15 hours CME in the prior 36 months specific to the imaging modality or organ system (half of which must be category 1)	

[2] Double-reading (2 or more physicians interpreting the same examination) is acceptable. Interpreting physicians may also re-interpret a previously interpreted examination and count it towards meeting the continuing experience requirement, as long as he/she did not do the initial interpretation. Examinations that are reviewed and evaluated for RADPEER™ or an alternative physician peer review program may count toward your continuing experience numbers.

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Sonographer/Technologist Qualifications

<table>
<tr><th colspan="3">Requirements for Ultrasound Technologist</th></tr>
<tr><th></th><th>Initial Accreditation</th><th>Renewal Accreditation</th></tr>
<tr><td rowspan="3">Initial Qualifications</td><td>• Certified or eligible for certification by:
o American Registry of Diagnostic Medical Sonographers (ARDMS), OR
o American Registry of Radiologic Technologists, Sonography (ARRT) (S).</td><td>• All sonographers must be certified and currently registered as RDMS (OB or AB*), RT(S), RT (VS), RVT, or RVS at the time of application for renewal of accreditation. (All sonographers should obtain certification within twenty-four months of eligibility or cross training.)</td></tr>
<tr><td colspan="2">Both Initial and Renewal Vascular Accreditation</td></tr>
<tr><td colspan="2">Sites applying for Vascular Ultrasound Accreditation must have at least one technologist who has an RVT (Registered Vascular Technologist) by the ARDMS, a Vascular Sonographer (VS) by the ARRT, or as a Registered Vascular Specialist (RVS) (also known as RCVT) by Cardiovascular Credentialing International (CCI) credential working <u>on-site</u> during the performance of routine vascular examinations.</td></tr>
<tr><td>Continuing Education</td><td colspan="2">Sonographers must be in compliance with the ARDMS, ARRT or CCI requirements for continuing education appropriate to their practices</td></tr>
</table>

***Breast (BR) credential earned <u>prior</u> to June 30, 2010 will be accepted.**

PRN technologists should meet all accreditation requirements. PRN technologists who are not certified may not be used at an accredited facility for more than two consecutive weeks and no more than a total of three weeks per calendar year.

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Quality Control

Effective, **June 1, 2014**, documentation of quality control (QC) is required as part of the application process. All facilities applying for accreditation must comply with the minimum frequencies listed below. As part of the accreditation application, facilities must demonstrate compliance with the ACR requirements for QC by providing:

- Report from the most recent annual survey performed by the medical physicist or designee
- Documentation of corrective action if the annual survey identifies performance problems

The ACR strongly recommends that QC be done under the supervision of a qualified medical physicist. The qualified medical physicist may be assisted by properly trained individuals in obtaining data, as well as other aspects of the program. These individuals should be approved by the qualified medical physicist, if available, in the techniques of performing tests, the function and limitations of the imaging equipment and test instruments, the reasons for the tests, and the importance of the test results. The qualified medical physicist should review, interpret, and approve all data. If it is not possible for a qualified medical physicist to perform the tasks designated for a medical physicist, these tasks may be performed by other appropriately trained personnel with ultrasound imaging equipment experience. These individuals must be approved by the physician(s) directing the clinical ultrasound practice.

Acceptance Testing (Optional)

Initial performance testing of newly installed imaging equipment should be performed, and should be completed before clinical use. This includes purchases of new scanners and/or transducers, as well as replacement equipment obtained under warranty or service contract. Acceptance testing should be done following equipment repair, and may also be warranted following major equipment upgrade. Equipment pulled from storage should also undergo acceptance testing. This testing should be comprehensive and include all tests done for the annual survey (see below) to provide complete performance baselines for comparison with future test results.

While not required, there is value to be gained by a clinical practice in doing acceptance testing, if only to verify to the practice that the equipment will perform as expected when purchasing new imaging systems. It would provide a performance baseline for comparison against the annual survey. This will also establish the timeframe for the following annual surveys.

Annual Survey (Required)

The QC tests listed in the table below ***are required*** (unless they are designated as optional) and must be performed at least annually on all machines and transducers in routine clinical use. The ACR realizes that surveys cannot usually be scheduled exactly on the anniversary date of the previous survey. Therefore a period of up to 14 months between surveys is acceptable. A signed report describing the results of the acceptance tests and annual equipment surveys must be provided to the physician(s) directing the clinical ultrasound practice and the responsible professional(s) in charge of obtaining or providing necessary service to the equipment. This communication must be provided in a timely manner consistent with the importance of any adverse findings.

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Annual Survey (System Performance Evaluation)	
QC Test	**Description**
1. Physical and Mechanical Inspection	Assures the mechanical integrity of the equipment, and the safety of patient and operator.
2. Image Uniformity and Artifact Survey	Identifies the presence of artifacts, often axial or lateral streaks in scans of uniform sections of a phantom. The use of "in-air" images (i.e., images acquired without the use of gel or phantom) may also be useful in detecting superficial artifacts.
3. Geometric Accuracy (Optional)	Commonly involves use of the scanner calipers to measure known distances between phantom test targets in the axial and lateral directions and also in the elevational direction for 3D probes. Other tests of geometric accuracy are acceptable, e.g. verifying accuracy of the pixel size calibration in the image header.
4. System Sensitivity	Methods relying on visual determination of the maximum depth of visualization of speckle patterns or phantom targets, and quantitative measurements of signal-to-noise ratio (SNR), have been reported.
5. Ultrasound Scanner Electronic Image Display Performance	Maintaining the performance of the image display is critical for providing the greatest diagnostic benefit of the scanner. Display characteristics that are evaluated may include gray scale response and luminance calibration, presence of pixel defects, and overall image quality. These evaluations are typically performed using specialized test pattern images, and may also require photometric equipment. See ACR Technical Standard for Electronic Practice of Medical Imaging.
6. Primary Interpretation Display Performance*	Primary diagnostic displays may be electronic soft-copy displays on a PACS workstation or hard-copy films. They should also include worklist monitors only if used for primary interpretation (other than color analysis). Display characteristics that are evaluated may include gray scale response and luminance calibration, presence of pixel defects, and overall image quality. These evaluations are typically performed using specialized test pattern images, and may also require photometric equipment. See ACR Technical Standard for Electronic Practice of Medical Imaging for additional information on tests and testing methods. (* Only required if located at the facility where ultrasound is performed.)
7. Contrast Resolution (Optional)	The use of both anechoic and low contrast echogenic targets has been suggested, as has the use of 2D cylindrical targets and 3D spherical targets.
8. Spatial Resolution (Optional)	Should be measured in the axial, lateral, and elevational directions. Various approaches have been described for these measurements via visual interpretation of groups of phantom pin/fiber targets and using computer-based algorithms to measure pin dimensions[1-4].
9. Evaluation of QC Program (if applicable)	Provides an independent assessment of the QC program, checks that appropriate actions are taken to correct problems, identifies areas where quality and QC testing may be improved, and enables a comparison of QC practices with those of other ultrasound sites.

Either subjective visual methods or objective computer-based approaches may be used to make these measurements[1]. If subjective methods are used, it is recommended that the images used to perform the tests be retained for comparison with subsequent test images.

Tests of uniformity, geometric accuracy, system sensitivity, and contrast and spatial resolutions must be made using an ultrasound phantom or test object. The ACR does not specify the phantom(s) to be used. Phantoms may be obtained from a variety of commercial vendors or may be fabricated by experienced personnel. Other approaches to performance measurement, e.g., the "paper-clip test"[5] and use of transducer evaluation devices which test the electrical and acoustic characteristics of each

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individual transducer array element[6], may **also** be used, but may not replace any of the required tests. Additional information may be found in the ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Real-time Ultrasound Equipment.

Quality Control Tests (Optional)

A continuous QC program is essential to assure the proper functioning of all ultrasound equipment and to identify problems before the diagnostic utility of the equipment is significantly impacted[7,8]. Routine QC is typically performed by appropriately trained sonographers or equipment service engineers. If any test results (acceptance tests, annual survey, QC) fall outside of the acceptable limits, corrective action must be taken. This is typically accomplished by an equipment service engineer. Appropriate action and notification must occur immediately if there is imminent danger to patients or staff using the equipment due to unsafe conditions. After a problem has been addressed, acceptance testing should be performed to assure adequate resolution of the problem, and these test results should be documented.

These tests should include:

Routine QC		
QC Test	**Description**	**Minimum Frequency**
1. Physical and Mechanical Inspection	Assures the mechanical integrity of the equipment, and the safety of patient and operator.	Semiannually
2. Image Uniformity and Artifact Survey	Identifies the presence of artifacts, often axial or lateral streaks in scans of uniform sections of a phantom. The use of "in-air" images (i.e., images acquired without the use of gel or phantom) may also be useful in detecting superficial artifacts. All transducer ports on each scanner should be tested using at least 1 transducer.	Semiannually
3. Geometric Accuracy (mechanically scanned transducers only)	Commonly involves use of the scanner calipers to measure known distances between test targets. Measurement is required only in the mechanically scanned directions.	Semiannually
4. Ultrasound Scanner Electronic Image Display Performance	Maintaining the performance of the image display is critical for providing the greatest diagnostic benefit of the scanner. They should also include worklist monitors only if used for primary interpretation (other than color analysis). Display characteristics that are evaluated may include gray scale response, presence of pixel defects, and overall image quality. These evaluations are typically performed using specialized test pattern images. See ACR Technical Standard for Electronic Practice of Medical Imaging for additional information on tests and testing methods.	Semiannually

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Routine QC		
QC Test	**Description**	**Minimum Frequency**
5. Primary Interpretation Display Performance*	Primary diagnostic displays may be electronic soft-copy displays on a PACS workstation or hard-copy films. Display characteristics that are evaluated may include gray scale response and luminance calibration, presence of pixel defects, and overall image quality. These evaluations are typically performed using specialized test pattern images, and may also require photometric equipment. See ACR Technical Standard for Electronic Practice of Medical Imaging for additional information on tests and testing methods. (* Only required if located at the facility where ultrasound is performed.)	Semiannually, or as judged appropriate based on the specific display technology, or prior QC testing data

Preventative Maintenance

Regular preventive maintenance should be performed and documented by a qualified equipment service engineer following the recommendations of the equipment vendor.

Quality Assurance

Physician Peer-Review Requirements

Examinations should be systematically reviewed and evaluated as part of the overall quality improvement program at the facility. Monitoring should include evaluation of the accuracy of interpretation as well as the appropriateness of the examination. Complications and adverse events or other activities that have the potential to become sentinel events must be monitored, analyzed and reported as required, and periodically reviewed in order to identify opportunities to improve patient care. These data should be collected in a manner that complies with statutory and regulatory peer-review procedures in order to ensure the confidentiality of the peer-review process.[3]

All sites initially applying for ACR accreditation and all sites renewing their accreditation must actively participate in a physician peer review program that performs the following functions:

- Includes a double reading (2 MDs interpreting the same study) assessment
- Allows for random selection of studies to be reviewed on a regularly scheduled basis
- Exams and procedures representative of the actual clinical practice of each physician
- Reviewer assessment of the agreement of the original report with subsequent review (or with surgical or pathological findings)
- A classification of peer-review findings with regard to level of quality concerns (one example is a 4-point scoring scale)
- Policies and procedures for action to be taken on significant discrepant peer-review findings for the purpose of achieving quality outcomes improvement
- Summary statistics and comparisons generated for each physician by imaging modality
- Summary data for each facility/practice by modality

There are several options available to meet this requirement. Sites may develop their own peer-review program, use a vendor product or use RADPEER™ (a peer-review process developed by the ACR). For information about RADPEER™ or eRADPEER™, visit the ACR web site at www.acr.org/SecondaryMainMenuCategories/quality_safety/radpeer.aspx.

[3] 2005 ACR Guidelines and Technical Standards. ACR Position Statement on Quality Control and Improvement, Safety, Infection Control, and Patient Education Concerns. Page IV.

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Accreditation Testing

Clinical Images

Clinical images for each type of ultrasound accreditation the facility is seeking must be submitted (see table below). Clinical images must be clearly labeled and obtained within the established time period. No images will be accepted for review that predates the application by more than six months. Since we do not know exactly when the application will be processed, do not collect images until you have received instructions with the testing material.

Normal examinations are requested. Examinations containing abnormal findings must be clearly documented in the accompanying physician report. The ACR is not responsible for abnormal evaluations. All views of an ultrasound examination must be from the same patient. ***Sites cannot submit images performed on models or volunteers.*** Films or CDs will be returned to the facility once the accreditation process is complete. The facility may choose which examinations it will submit for accreditation (see selection list in Clinical Image section). ***Note: The reviewers will assume that the images submitted are examples of your best work.***

Vascular Exam Diagnostic Criteria

Diagnostic physiologic and anatomic criteria for interpretation in each area being reviewed ***must*** be submitted with vascular exams.

Reporting of Results

Physician reports are requested to confirm the date and type of examination performed for all examinations. For vascular work, the reports must contain results from noninvasive pressure testing, where appropriate, obtained either from the referral source or from actual testing performed at your own site of practice. It is desirable that normal lab values for velocity measurements appear at the bottom of reports for reference; this is especially helpful with carotid examinations. If velocity measurements are not on the report, please include a copy of the measurements. Each ultrasound exam submitted must have a report that is clearly labeled; vascular reports must contain diagnostic physiologic and anatomic findings.

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Types of Ultrasound Accreditation	
Categories	**Examinations Required**
Obstetrical	
• 1st trimester (Between 6-12 wks) • 2nd trimester (Between 13-<26 wks)***** • 3rd trimester (>26 wks) ***For ACR purposes, 2nd trimester exams should be 18 - <26 wks**	1 exam 1 exam 1 exam
Trimester Specific Obstetrical ***Your site will only be accredited in the specific trimester(s) that you select***	
• One trimester only (1st, 2nd or 3rd trimester) **OR** • Any combination of two trimesters	2 exams (if 1st trimester, both must be endovaginal) 1 exam of each trimester (if 1st trimester selected, exam must be endovaginal)
Gynecological	
• Female pelvis • Female pelvis ***For GYN Module, at least on exam must be an endovaginal**	1 endovaginal 1 endovaginal or transabdominal
General	
• Complete Upper Abdominal Ultrasound (if performed)* • Select ***1 different exam*** from the following list: 1. Complete Upper Abdominal Ultrasound 2. Renal/urinary 3. Transrectal/prostate 4. Shoulder 5. Small parts ***(select only one exam)***: Scrotum **OR** Thyroid/parathyroid **If Upper Abdominal US not performed, a total of 2 exams must be selected from the remaining exam options)*	1 exam 1 exam
Vascular (1 exam type from each category performed at this site: Peripheral, Cerebrovascular, Abdominal, and/or Deep Abdominal)	
• **Peripheral Exams:** ***Arterial*** Arterial occlusive disease Bypass graft **OR** ***Venous*** Thrombosis-lower extremities Thrombosis – upper arm Vein mapping Incompetence	1 normal exam
• **Cerebrovascular Exam** Extracranial carotid (bilateral)	1 normal exam
• **Abdominal Exams**: ***Liver*** ***OR*** ***Renal*** Liver vasculature — Renal artery stenosis Liver transplantation — Renal vein thrombosis TIPS — Renal artery thrombosis	1 normal exam
• **Deep Abdominal Exams:** Aorta and branches Inferior Vena Cava And Draining Veins	1 normal exam

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Pediatric (≤ 18 years) If performing 2 or more types of the exams listed, 2 exam types must be selected. If only one exam type selected, 2 exams must be submitted.	
• Pediatric Neurosonology • Pediatric Hip • Pyloric Stenosis • Intussusception	1 exam 1 exam

Accreditation Fees

Facilities must submit the appropriate fee with their application. All fees are non-refundable and subject to change without notice. Checks should be made payable to the American College of Radiology (include modality accreditation ID#, if available) (see table below). American Express, MasterCard, and Visa are accepted.

Accreditation Fees	
Cycle	**Fees**
Accreditation (Initial cycle and renewal)	$1450 OB antepartum ultrasound, only $1450 Trimester Specific Obstetrical, only $1450 Gynecological ultrasound, only $1450 General ultrasound, only $1450 Vascular only $1450 Pediatric only $1650 Combination accreditation (two types) $1750 Combination accreditation (three types) $1850 Combination accreditation (four types) $1950 Combination accreditation (all types)
Repeat	$600
Reinstate/Corrective Action Plan	$1450 Single $1650 Two types $1750 Three types $1850 Four types $1950 All types
Add new module mid cycle	$1450 for one additional module $1650 for two additional modules $1750 for three additional modules $1850 for four additional modules
Replacement Certificate	$50 per certificate

Note: Fees subject to change without notice.

For Additional Information

For further information log on to the ACR Web site at www.acr.org, click on "Accreditation" and click on "Ultrasound". A link to "Frequently Asked Questions" is available in the Ultrasound menu, along with other useful information about accreditation and many of the program's forms. To contact the ACR Ultrasound Accreditation Program office by phone, dial (800) 770-0145.

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ACR Practice Guidelines and Technical Standards

The following ACR Practice Guidelines and Technical Standards are pertinent to achieving and maintaining Breast Ultrasound Accreditation. These guidelines and standards form the basis of the accreditation program.

1. ACR Practice Guideline for Performing and Interpreting Diagnostic Ultrasound Examinations
2. ACR Technical Standard for Diagnostic Medical Physics Performance Monitoring of Real Time Ultrasound Equipment
3. ACR Practice Guideline for Communication of Diagnostic Imaging Findings
4. ACR Practice Guideline for Continuing Medical Education
5. ACR Technical Standard for Electronic Practice of Medical Imaging
6. ACR Position Statement: Quality Control and Improvement, Safety, Infection Control, and Patient Education Concerns

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