

ACR Diagnostic Imaging Accreditation

The Physicist Role

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Team Lead CT/MR Accreditation

Outline

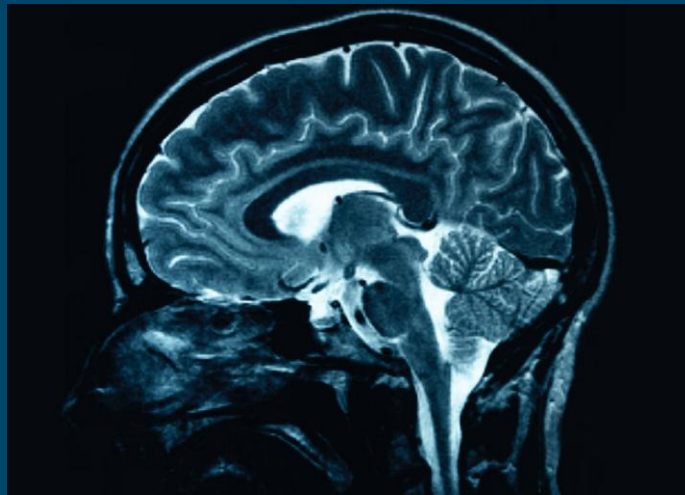
- Overview of ACR
- MIPPA
- Physicist Role
 - Application
 - Testing
 - QC requirements

ACR Mission Statement

The mission of the ACR is to serve patients and society by maximizing the value of radiology, radiation oncology, interventional radiology, nuclear medicine and medical physics by advancing the science of radiology, improving quality of patient care, positively influencing the socio-economics of the practice of radiology, providing continuing education for radiology and allied health professions and conducting research for the future of radiology.

Goals of ACR Accreditation

- Set quality standards for imaging practices
- Provide recommendations for improvement
- Help sites improve quality of patient care
- Recognize quality imaging practices

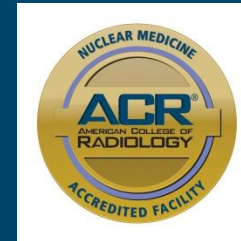
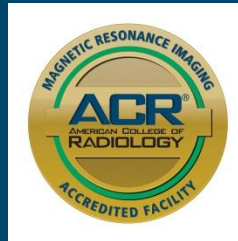
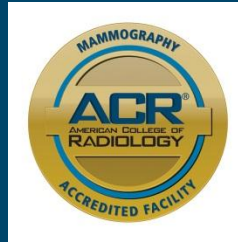


History of ACR

- 1987- Mammography accreditation
- 1987- Radiation oncology
- 1994- FDA adopts ACR's mammography accreditation program
- 1995- Ultrasound accreditation
- 1996- Stereotactic breast biopsy accreditation
- 1997- MRI accreditation
- 1998- Ultrasound guided breast biopsy
- 1999- Nuclear Medicine accreditation
- 2002- CT and PET accreditation
- 2007- Cardiac MRI
- 2008- Modular MRI
- 2010- Breast MRI

Gold Seal

- ACR Nationally Recognized Accreditation Programs:



Accreditation Statistics

Modality	Currently Active Facilities	Currently Active Units	Currently Accredited Facilities	Currently Accredited Units
Mammography	8292	11796	8123	11301
MRI	6284	7471	5727	6935
CT	5388	6984	4465	5523
Nuclear Medicine	2365	3438	2068	3609
PET	1174	1191	1054	1050
Breast MR	566	659	148	164

Accreditation Statistics

Modality	Currently Active Facilities	Currently Active Units	Currently Accredited Facilities	Currently Accredited Units
Ultrasound	6764		3562	
Breast Ultrasound	1553		1376	
Stereotactic Breast Biopsy	973	1008	910	934
Radiation Oncology	128		230	
Total	33,487	32,547	27,663	29,516


What is ACR Accreditation?

- Concepts of each accreditation program are reviewed by the ACR council
 - Peer review process developed and monitored by experts
 - Ongoing review of each accreditation program by the committee
 - Specific parameters of each imaging modality are assessed
 - Pilot testing of each program before being launched

What is ACR Accreditation?

- An educational process with self assessment and peer review
 - Staff qualifications
 - Policies and procedures
 - Equipment specifications
 - Diagnostic image quality
 - Therapeutic treatment quality

What is ACR Accreditation?



QUALITY IS OUR IMAGE

Site Map | Contact | Help

SEARCH SITE SEARCH INTERNET

[Powered by Google]

LOGIN RESIDENTS ABOUT US CAREER CENTER PATIENT INFO MEDIA ROOM MY PROFILE JOBS AT ACR


Print Page

[ACR Homepage](#)
[Q&S Resources Home](#)
[Guidance Resources Home](#)
[Appropriateness Criteria Home](#)
[Practice Guidelines and Technical Standards Home](#)

Additional Resources
[Manual on Contrast Media](#)
[Guidance Document on MR Safe Practices: 2007](#)
[White Paper on Radiation Dose in Medicine](#)
[Radiology Safety Resources](#)

Home | Quality & Safety Resources | Guidelines and Standards

Practice Guidelines and Technical Standards



The American College of Radiology, with more than 30,000 members, is the principal organization of radiologists, radiation oncologists, and clinical medical physicists in the United States. The College is a nonprofit professional society whose primary purposes are to advance the science of radiology, improve radiologic services to the patient, study the socioeconomic aspects of the practice of radiology, and encourage continuing education for radiologists, radiation oncologists, medical physicists, and persons practicing in allied professional fields. [Read More](#)

Preamble

These guidelines are an educational tool designed to assist practitioners in providing appropriate radiologic 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. [Read more](#)

Field Review – Comment on Draft Guidelines

The field review process provides time for all ACR members to offer thoughtful comments about the Practice Guidelines and Technical Standards

[Online Commenting](#)

[A Brief Description of the Field Review Process](#)

Practice Guidelines by Modality

PRACTICE GUIDELINES describe recommended conduct in specific areas of clinical practice. They are based on analysis of current literature, expert opinion, open forum commentary, and informal consensus. Guidelines are not intended to be legal standards of care or conduct and may be modified as determined by individual circumstances and available resources.

About MIPAA

- The Medicare Improvements for Patients and Providers Act (MIPPA) passed in July 2008
- Providers of advanced diagnostic imaging (ADI) services that bill under part B of the Medicare Physician Fee Schedule must be accredited by January 1, 2012 to receive payment for the technical component of these services
- The accreditation requirements do not apply to ADI services furnished in a hospital outpatient setting
- Already accredited facilities will have to keep their renewals current

CMS Requirements

- Primary source verification of personnel qualifications
- Patient record retention/retrieval policy
- Consumer complaint policy
- Consumer complaint notice
- Staff and patient safety policy
- Unannounced site visits from CMS or ACR

CMS Requirements

- ACR will share accreditation status with CMS
- No “under review” or “provisional” accreditation status will be accepted by CMS
- False or misleading information provided to an accrediting body to achieve accreditation can be used to initiate federal fraud investigation

Physicist Role



***Applying for and achieving ACR
accreditation is a team process that
involves everyone in the facility***

Preparing for Accreditation

Visit the ACR website at
www.acr.org



 Print Page?

[ACR Homepage](#)

[Verify Your Accreditation Status](#)

[Accredited Facility Search](#)

[Getting Started: Apply for Accreditation](#)

[Mammography](#)

[Radiation Oncology](#)

[Breast Magnetic Resonance Imaging \(MRI\)](#)

[Breast Ultrasound](#)

[Computed Tomography](#)

[Magnetic Resonance Imaging \(MRI\)](#)

[Nuclear Medicine and PET](#)

[Stereotactic Breast Biopsy](#)

[Ultrasound](#)

[Breast Imaging Center of Excellence](#)

[Marketing Toolkit for ACR Accredited Practices](#)

[Home](#) | [Accreditation](#)

Accreditation

[Why Get Accredited?](#)

[New: MIPPA/CMS Mandates](#)

[Getting Started: Apply for Accreditation](#)

[Already accredited in advanced imaging?](#)

[Learn more about CMS mandates that affect your practice](#)

[Accreditation Marketing Kit](#)

[10 Things You Need to Know About CMS/MIPPA Accreditation Requirements](#)

[Accreditation Requirements for Suppliers of the Technical Component of Advanced Imaging](#)

[Consumer Complaint Notice to Patients](#)

[New Mobile Multi-Site Policy](#)

[Verify Your Accreditation Status](#)

[Accreditation E-newsletters](#)

[General Accreditation FAQs](#)

[Centers for Medicare & Medicaid Services MLN Matters article SE1122](#)

[Contact Us](#)

Preparing for Accreditation

- Each modality will list the most updated version of the program requirements
- Each modality will have a link to “Testing and QC Forms”
- Testing and QC forms will have the most updated version of the testing instructions

Print Page?

ACR Homepage

Computed Tomography
Accreditation History

CT Requirements

CT Frequently Asked Questions

Testing and QC Forms

Home | Accreditation | Computed Tomography

Computed Tomography



The CT Accreditation Program involves the acquisition of clinical and phantom images, dose measurements, and the submission of scanning protocols. [Click here](#) for more information on the history of this program.

Contact Us

For additional information, contact us by:

- **Email:** ctaccred@acr.org
- **Phone:** (800) 770-0145

Program Requirements

- [Click here](#) for a listing of CT Program Requirements
- [ACR CT, MRI, Nuclear Medicine and PET Accreditation Program Requirements for Medical Physicists/MR Scientists – 10/30/09 Revision, FAQs Available](#)

Frequently Asked Questions

- [My facility has never applied for accreditation before, and would like to become ACR Accredited for Computed Tomography. How do we get started?](#)
- [Will CT accreditation become mandatory?](#)
- [Is my hospital required to be accredited under the new MIPPA legislation?](#)
- [How many people at my facility are involved in the accreditation process?](#)

[More >](#)



ACR Homepage
DMAP Overview
CT Requirements
Clinical Image Quality Guide
Testing Instructions
Quality Assurance Questionnaire
Clinical Test Image Data Form
DesAcc Order Form
Phantom Order Form
Phantom Testing Instructions
CTAP Phantom Data/Dose Forms
CTAP FAQs

Testing and QC Forms

Facilities that have applied for the Computed Tomography (CT) Accreditation Program will read the following documents and use the forms to gather data that will be entered into the online testing package when the images are sent for review. Please note that these forms should not be submitted to the ACR for accreditation.

Computed Tomography Testing and QC Forms

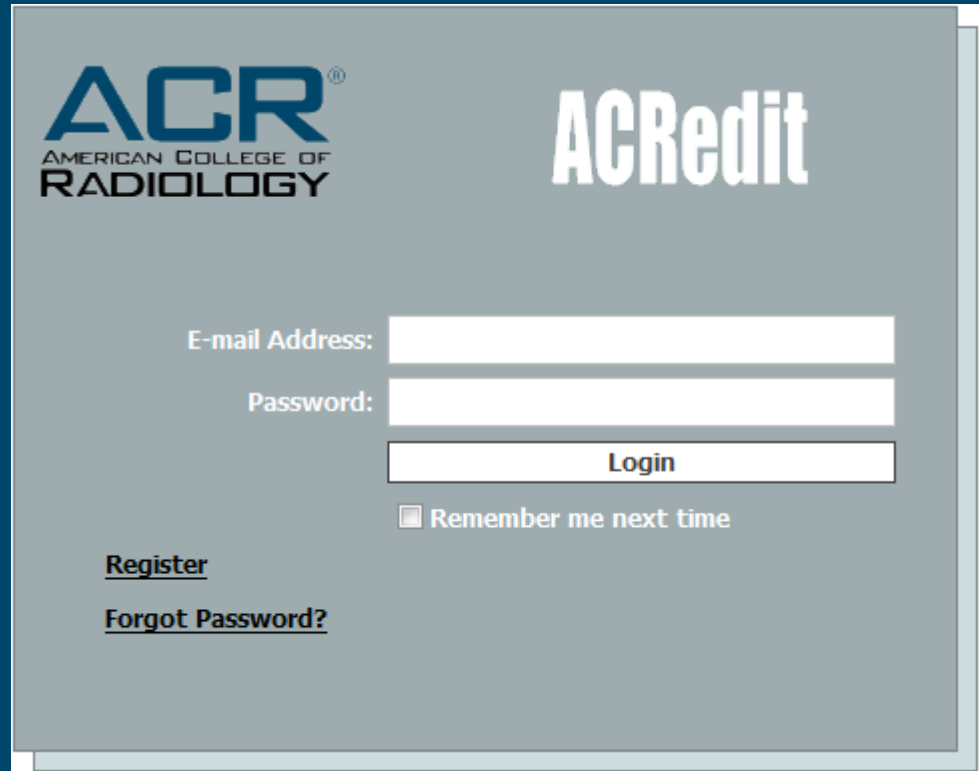
- [DMAP Overview](#)
- [CT Requirements](#)
- [Clinical Image Quality Guide](#)
- [Testing Instructions](#)
- [Quality Assurance Questionnaire](#)
- [Clinical Test Image Data Form](#)
- [DesAcc Order Form](#)
- [Phantom Order Form](#)
- [Phantom Testing Instructions](#)
- [CTAP Phantom Data/Dose Forms](#)
- [CTAP FAQs](#)

Applying for Accreditation

<https://acredit.acr.org>

ACRedit database

- MR
- CT
- Nuc Med/PET
- US
- Breast MR and Breast Imaging in near future

A screenshot of the ACR ACRedit login page. The page has a grey background. In the top left corner is the ACR logo with the text 'AMERICAN COLLEGE OF RADIOLOGY' below it. In the top right corner is the word 'ACRedit' in a large, white, sans-serif font. Below the logo, there are two input fields: 'E-mail Address:' and 'Password:'. To the right of the 'Password:' field is a 'Login' button. Below the 'Login' button is a checkbox labeled 'Remember me next time'. At the bottom left, there are two links: 'Register' and 'Forgot Password?'.

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RADIOLOGY

ACRedit

E-mail Address:

Password:

☐ Remember me next time

[Register](#)

[Forgot Password?](#)

Homepage



Training Site ---- Training Site

Home | [My Applications \(1\)](#) | [My Testing Packages \(4\)](#) | [My Final Reports \(0\)](#) | [My Modalities \(4\)](#) | [My Profile](#) | [Logout](#)

User E-mail: [kptraining@test.com](#) Role: [FacilityUser](#)

Accreditation Home Page

Welcome to the American College of Radiology (ACR) online accreditation system. Please read the brief descriptions below to become familiar with the functions on each page of this application. You may access the various pages by clicking on the links below or by clicking on the links at the top of this page. At any time you may log out of the application and finish it later.

In the Application and Testing Package there is a left navigation menu with a list of all forms. A green checkmark means that the form is complete. A red X means that the form is incomplete. You can navigate to each form from the left menu by clicking on the form title.

Please note that you must complete all information on the page and click "Next" prior to logging out or moving to another screen in order for that page to be saved.

My Applications

A listing of all draft and submitted applications may be viewed here. Use this page to apply for a new facility, edit draft applications or print a copy of a submitted application.

My Testing Packages

A listing of all draft and submitted testing packages may be viewed here. Use this page to complete the testing package for each location for which you have submitted an application. You may also edit draft testing packages or print a copy of a submitted testing package from this page.

My Final Reports

A listing of all final reports issued by modality, unit and date may be viewed here. If your unit was found deficient, the options for proceeding with the accreditation process may be found here. If you have not received one of the final reports listed on this page, you may have a link to the final report sent to the modality-specific supervising physician by clicking the "resend" link.

My Modalities

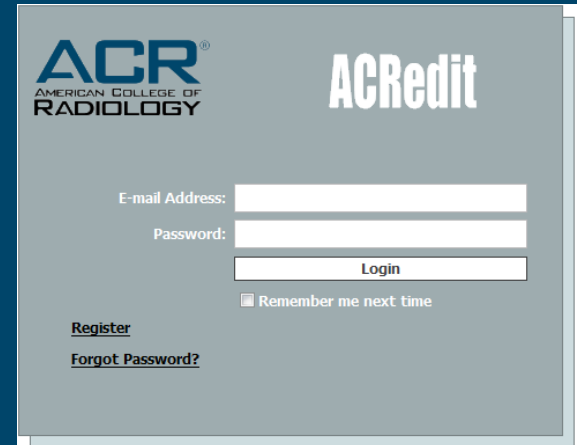
Use the "Modality Details" link to edit demographic information for a specific facility such as the facility name, location and mailing address, contact person, and supervising physician. You may also add and/or withdraw units and modules using the "Units" link.

[Contact Us](#) | [Program Requirement Documents](#) | [Security](#) | [ACR Web Site](#)



QUALITY IS OUR IMAGE

- ACRedit database used for:
 - Initial applications
 - Renewals
 - Adding units
 - Adding modalities
 - Adding modules and patient types
 - Submitting testing packets
 - Uploading documents

A screenshot of the ACR ACRedit login interface. The page has a light gray background. In the top left corner is the ACR logo with the text 'AMERICAN COLLEGE OF RADIOLOGY' underneath. In the top right corner is the word 'ACRedit' in a large, bold, sans-serif font. Below the logos, there are two input fields: 'E-mail Address:' and 'Password:'. To the right of the 'Password:' field is a 'Login' button. Below the 'Login' button is a checkbox labeled 'Remember me next time'. At the bottom left of the login area, there are two links: 'Register' and 'Forgot Password?'.

ACR
AMERICAN COLLEGE OF
RADIOLOGY

ACRedit

E-mail Address:

Password:

Login

☐ Remember me next time

[Register](#)

[Forgot Password?](#)

Applying for Accreditation

- Application
 - Practice characteristics
 - Practice policy and procedures
 - Personnel
 - Equipment
 - Modality specific information
 - Peer review practices

Other Personnel

The details of your modality's accreditation application can only be discussed with staff that is listed as a contact person or personnel. If personnel at your facility other than those listed under physicians, technologists or medical physicists will be checking the status of your application, you must list them here.

#	<u>Last Name</u>	<u>First Name</u>	<u>Middle Initial</u>	<u>Position Title</u>	Action
1	Doe	Jenny		Accreditation manager	Delete
2	Last	First		CEO	Delete
3					Delete

Add New Person

Save

Cancel

Physicist Role in Accreditation

- Keep informed
- Communicate with the facility
 - Review their application
- Provide accurate personnel information
- Meet ACR requirements for Medical Physicists and MR Scientists

Physicist Role in Accreditation

- Application is submitted and processed
- Online testing packets
 - Available in the ACRedit data base
 - Online testing packet contains phantom and clinical data forms
- Barcode labels are mailed



Training Site ---- Training Site

Home | [My Applications \(1\)](#) | [My Testing Packages \(4\)](#) | [My Final Reports \(0\)](#) | [My Modalities \(4\)](#) | [My Profile](#) | [Logout](#)

User E-mail: kptraining@test.com

Role: FacilityUser

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[Contact Us](#) | [Program Requirement Documents](#) | [Security](#) | [ACR Web Site](#)

Instruction Form

☒ Quality Assurance

Questionnaire

Unit# 01 GEMS Optima MR450w
200115

☒ Annual System Performance

Evaluation

☒ Clinical T1D (Brain for
transient ischemic attack)

☒ Clinical T1D (Internal auditory
canal (IAC/temporal bone) for
hearing loss)

☒ Clinical T1D (Brain for
suspected demyelinating disease)

☒ Clinical T1D (Pituitary with
dynamic contrast enhancement)

☒ Phantom Site Scanning Data
Form (Large Phantom)

[Submit](#)

Instruction Form

All testing instructions and forms can be found on the [ACR website](#). Please read all instructions prior to completing your online testing package or submitting examinations for accreditation review. To maximize the efficiency of your online session, you may print blank forms from the same page to gather all necessary information.



Please read the following instructions before completing and submitting the Testing Package. If instructions are not followed, this could result in accreditation failure.

When submitting your application for this facility location, you indicated that you would submit the following clinical examinations via film or CD:

Unit# 01: GE Medical Systems Optima MR450w 200115

Submission Type: CD

Clinical Exams Selected: Brain for transient ischemic attack, Internal auditory canal (IAC/temporal bone) for hearing loss, Brain for suspected demyelinating disease, Pituitary with dynamic contrast enhancement

If any of the above information has changed, DO NOT SUBMIT THIS TESTING PACKAGE. You MUST contact the American College of Radiology immediately at 800-770-0145 to change your information.

[Next](#)

Time Frame

- Sites have 45 days to submit testing materials
- Extensions are on a case by case basis
- **Contact ACR!**
- Submissions are sent for review
- Final reports are generated within approximately 90 days of material submission



Final Reports

- Final reports are sent via an email link to the supervising physician and administrator listed in the application
 - Paper final reports are no longer sent
 - Certificates and decals are mailed
- Ask facility to forward you the email link with the final report
- Sites have 15 days to submit an online option form for unacceptable reports
- Call ACR for questions on option forms!

Options

- Options after initial/renewal
 - Repeat
 - Appeal
 - Withdraw module
- Options after repeat
 - Reinstate with corrective action
 - All testing (clinical and phantom) must be resubmitted
 - Appeal
 - Withdraw
- Options after reinstate with corrective action
 - Schedule onsite consultation
 - Appeal
 - Withdraw

Initial Cycle Information: *** Click on a cycle above ***

Applications

Testing Packages

Review Sheets

Final Reports

Modules/Exams

Milestones

Report Date	View Date	Option Status	Option Date	Action
07/25/2011	N/A	Pending - Select Option	N/A	View Details Resend Final Report

Modalities

CT Accreditation



Qualifications	Medical Physicist
Initial	<p><u>Board Certified</u></p> <p>Certified in Diagnostic Radiological Physics or Radiological Physics by the American Board of Radiology; in Diagnostic Imaging Physics by the American Board of Medical Physics; or in Diagnostic Radiology Physics by the Canadian College of Physicists in Medicine</p> <p>OR</p> <p><u>Not Board Certified in Required Subspecialty</u></p> <ul style="list-style-type: none"> <li>• Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution, <i>and</i> <li>• Formal coursework in the biological sciences with at least <ul style="list-style-type: none"> <li>– 1 course in biology or radiation biology, and <li>– 1 course in anatomy, physiology, or similar topics related to the practice of medical physics <li>• 3 years of documented experience in a clinical CT environment <p>OR</p> <p><u>Grandfathered</u></p> <p>Conducted surveys of at least 3 CT units between January 1, 2007 and January 1, 2010</p>
Continuing Experience	Upon renewal, 2 CT unit surveys in prior 24 months
Continuing Education	Upon renewal, 15 CEU/CME (1/2 Cat 1) in prior 36 months (must include credits pertinent to the accredited modality)

Physicist Role in Accreditation

- CT Accreditation

- Modular

- Head/Neck
 - Chest
 - Abdomen
 - Cardiac

- Application selections

- Adult and pediatric, adult only or pediatric only
 - Sites selects the modules and the exams for submissions
 - Sites select to submit clinical exams on film or CD
 - Phantom images MUST be submitted on CD

Physicist Role in Accreditation

- CT Phantom Scanning
 - Phantom is scanned with required protocols based on sites application
 - Adult abdomen scan is required for all sites
 - Adult head and pediatric head and abdomen may also be required
 - Must use GAMMEX 464 phantom to accredit all units at a facility
 - Phantom order form available on www.acr.org website

Physicist Role in Accreditation

- CT Phantom Evaluation
 - CT number calibration
 - Low contrast criteria (contrast to noise ratio)
 - Uniformity
 - Artifacts



Physicist Role in Accreditation

- Dosimetry
 - Must be performed by the medical physicist
 - Use same protocols used on ACR phantom scanning
 - Head CTDI phantom: 16 cm diameter, 15 cm length
 - Used for the adult and pediatric head and pediatric abdomen scan
 - Body CTDI phantom: 32 cm diameter, 15 cm length
 - Dose calculation Excel spreadsheets available at acr.org/accreditation/computed/qc_forms.aspx

Physicist Role in Accreditation

Examinations	Pass/Fail Criteria	Reference Levels
	CTDIvol (mGy)	CTDIvol (mGy)
Adult head	80	75
Adult abdomen	30	25
Pediatric abdomen	25	20
Pediatric head	To be determined	To be determined

Physicist Role in Accreditation

- Preparing the phantom CD
 - Burn all of the ACR phantom and dosimetry images for each required protocol to one CD and then create an exact copy
 - Phantom CD may or may not contain an embedded DICOM viewer
 - Place the CD 1 and CD 2 barcode labels on the envelope, sleeve or plastic case

Physicist Role in Accreditation

- CT Annual System Performance Evaluation
 - Sites must submit the last Annual System Performance Evaluation (to include evaluation of the technologist QC)
 - Full report with summary must be mailed or uploaded
 - Documentation of any corrective action taken must be submitted if recommended in the Annual System Performance Evaluation (i.e. test failures or data outside action limits)
 - QC Manual is currently in development

Physicist Role in Accreditation

- Common pitfalls
 - The techniques used on the ACR phantom and dose images do not match the technique parameters listed in the phantom data form
 - All images (0-120 mm) for all required protocols and dosimetry are not burned to one CD
 - mA, mAs and effective mAs are confused
 - Table increment is not adjusted in dose calculation if the axial total beam width does not match the helical protocol

Physicist Role in Accreditation

- Check the site's application to verify what protocols are required for phantom testing
- Ensure that the techniques used on the ACR and dose phantom images match the techniques documented in the phantom data form
- Burn complete sets of ACR phantom images and dosimetry to one CD (and create and submit a copy)

MR Accreditation



MR Accreditation

- Modular
 - Head/neck module
 - Spine module
 - MSK module
 - Body Module
 - MRA module
 - Cardiac module
- ACR large phantom from JM Specialty Parts Inc.
 - Used for all whole body scanners
- ACR small phantom from JM Specialty Parts Inc.
 - Used for all extremity magnets
- Order forms are available on acr.org website

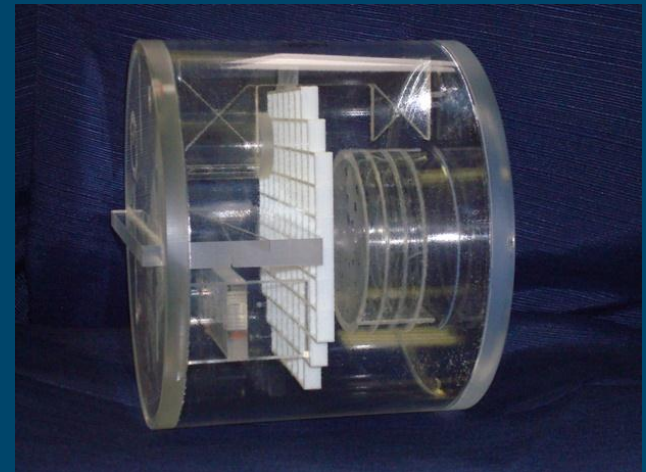
Qualifications	Medical Physicist	MR Scientist
Initial	<p align="center"><u>Board Certified</u></p> <p>Certified in Diagnostic Radiological Physics or Radiological Physics by the American Board of Radiology; in Diagnostic Imaging Physics or Magnetic Resonance Imaging Physics by the American Board of Medical Physics; or in Diagnostic Radiology Physics or Magnetic Resonance Imaging Physics by the Canadian College of Physicists in Medicine</p> <p align="center">OR</p> <p align="center"><u>Not Board Certified in Required Subspecialty</u></p> <ul style="list-style-type: none"> Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution, and Formal coursework in the biological sciences with at least <ul style="list-style-type: none"> 1 course in biology or radiation biology, and 1 course in anatomy, physiology, or similar topics related to the practice of medical physics 3 years of documented experience in a clinical setting <p align="center">OR</p> <p align="center"><u>Grandfathered</u></p> <p>Conducted surveys of at least 3 MRI units between January 1, 2007 and January 1, 2010</p>	<ul style="list-style-type: none"> Graduate degree in a physical science involving nuclear MR (NMR) or MRI 3 years of documented experience in a clinical MRI environment
Continuing Experience	Upon renewal, 2 MRI unit surveys in prior 24 months	
Continuing Education	Upon renewal, 15 CEU/CME (1/2 Cat 1) in prior 36 months (must include credits pertinent to the accredited modality)	

Physicist Role in Accreditation

- MR Phantom Scanning
 - The large phantom is scanned using two specified phantom scans using ACR protocols and two scans using site's routine clinical head protocol
 - Small phantom is scanned using two specified phantom scans using ACR protocols and two phantom scans using site's routine clinical knee protocol

Physicist Role in Accreditation

- MR phantom evaluation
 - Limiting high-contrast spatial resolution
 - Slice thickness accuracy
 - Distance measurement and accuracy
 - Signal uniformity
 - Image ghosting ratio
 - Low-contrast detectability
 - Slice positioning accuracy
 - Image Artifacts



Physicist Role in Accreditation

- Preparing the Phantom CD
 - Burn the ACR T1 and T2 sequences and the site's T1 and T2 sequences along with the sagittal localizer to one CD
 - DICOM only
 - No embedded viewer
 - Place CD barcode label on the sleeve or envelope of the CD

Physicist Role in Accreditation

- MR Annual System Performance Evaluation and Quality Control Testing
 - All facilities applying for accreditation must demonstrate compliance with the ACR requirements for quality control (QC) and Annual MRI System Performance Evaluation or Acceptance Testing (for new units)
 - Annual System Performance Evaluation or Acceptance testing must be performed by a medical physicist/MR scientist
 - Full report must be submitted or uploaded for review
 - Documentation of any corrective action taken must be submitted if recommended in the Annual System Performance Evaluation (i.e. test failures or data outside action limits)

Physicist Role in Accreditation

- Common Pitfalls
 - Phantom CDs contain an embedded viewer
 - Not sending uncompressed DICOM images
 - Not submitting all of the required phantom sequences
 - Submitting corrupt CDs

Nuclear Medicine/PET Accreditation



Physicist Role in Accreditation

- Nuclear Medicine Accreditation
 - **Module 1** – General Nuclear Medicine (planar imaging)
 - Module 2** – SPECT (single photon emission computed tomography)
 - Module 3** – Nuclear Cardiology Imaging
- PET Accreditation
 - **Module 1** – Oncology
 - Module 2** – Brain
 - Module 3** – Cardiac

Physicist Role in Accreditation

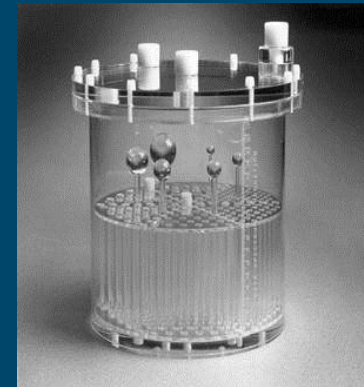
- Nuclear Medicine phantom scanning
 - All modules (Planar Only or SPECT with Planar) must submit Tc-99m or Co-57 intrinsic or system flood field image as well as a Tl-201 and/or Ga-67/In-111 flood field image (if applicable)
 - Module 1 (Planar Imaging Only)
 - Intrinsic or system resolution images required
 - Use four-quadrant bar phantom

Physicist Role in Accreditation

- Nuclear Medicine Phantom Scanning
 - Module 2 and/or 3 (SPECT with Planar)
 - Must use Data Spectrum Deluxe flanged or flangeless phantom
- PET Phantom Scanning
 - Must use Data Spectrum phantom

Physicist Role in Accreditation

- Nuclear Medicine/PET phantom evaluation
 - Planar
 - Uniformity
 - Spatial Resolution
 - SPECT and PET
 - Uniformity
 - Noise
 - Contrast
 - Spatial Resolution



Physicist Role in Accreditation

- Common Pitfalls
 - Incomplete data set
 - Failure to include rod section
 - Center of rotation
 - High-count flood
 - Phantom mixing and positioning

Qualifications	Medical Physicist
Initial	<p align="center"><u>Board Certified</u></p> <p>Certified in Medical Nuclear Physics or Radiological Physics by the American Board of Radiology; in Nuclear Medicine Physics by the American Board of Medical Physics; in Nuclear Medicine Physics by the Canadian College of Physicists in Medicine; or in Nuclear Medicine Physics and Instrumentation by the American Board of Science in Nuclear Medicine</p> <p align="center">OR</p> <p align="center"><u>Not Board Certified in Required Subspecialty</u></p> <ul style="list-style-type: none"> • Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution, <i>and</i> • Formal coursework in the biological sciences with at least <ul style="list-style-type: none"> – 1 course in biology or radiation biology, and – 1 course in anatomy, physiology, or similar topics related to the practice of medical physics • 3 years of documented experience in a clinical nuclear medicine environment <p align="center">OR</p> <p align="center"><u>Grandfathered</u></p> <p>Conducted surveys of at least 3 NM units between January 1, 2007 and January 1, 2010</p>
Continuing Experience	Upon renewal, 2 NM camera surveys in prior 24 months
Continuing Education	Upon renewal, 15 CEU/CME (1/2 Cat 1) in prior 36 months (must include credits pertinent to the accredited modality)

Physicist Role in Accreditation

- Nuclear Medicine Quality Control Testing
 - When systems are installed, acceptance testing must be performed by qualified medical physicist
 - Acceptance tests may be performed by qualified nuclear medicine technologist or medical physicist in-training using NEMA protocols and other testing protocols developed and approved the qualified practicing medical physicist
 - Test results should be reviewed by qualified medical physicist and included in the annual survey report

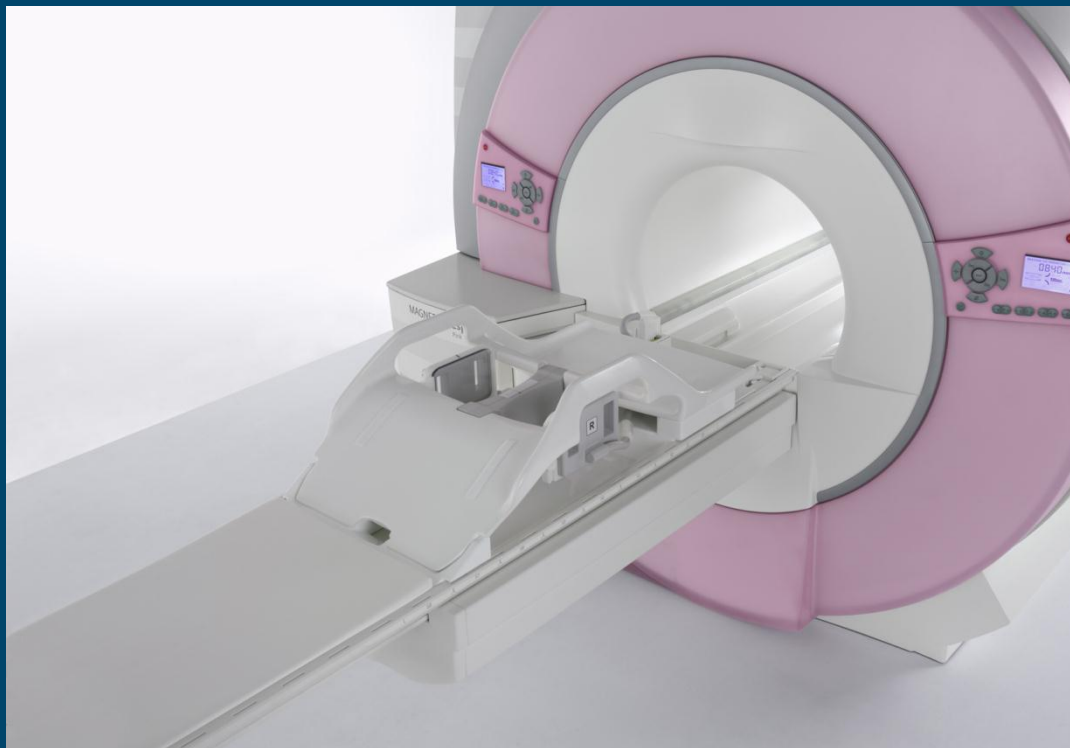
Physicist Role in Accreditation

- Nuclear Medicine Quality Control Testing
 - Performance testing on all units should be done at least annually
 - Most recent “Physicist Report” for each unit must be submitted
 - Documentation of corrective action must be included if indicated in the Physicist Report

Physicist Role in Accreditation

- Gamma camera Quality Control Testing
 - Uniformity (intrinsic and system)
 - Spatial resolution
 - Sensitivity
 - Energy resolution
- PET Quality Control Testing
 - ACR approved phantom purchased from Data Spectrum
 - Uniformity
 - Noise
 - Spatial resolution
 - Dose Calibrators
 - Linearity
 - Accuracy

Breast MR Accreditation



Physicist Role in Accreditation

- Breast MR
 - No requirement for minimum field strength
 - Must have a dedicated breast coil
 - Be capable of simultaneous, bilateral imaging
 - Meet all state and federal performance requirements
 - Capacity to perform mammographic correlation, directed breast ultrasound and MR-guided intervention or create referral arrangement with a cooperating facility that provides these services
 - Must establish/maintain medical outcomes audit program to follow up positive assessments and correlate pathology results with findings
 - Must use Bi-Rads

Physicist Role in Accreditation

- 2 bilateral breast MR cases submitted
 - 1 known enhancing biopsy proven carcinoma
 - 1 benign finding (BI-RADS 1 or 2)
- Reviewed by 3 ACR reviewers
 - 1 technical reviewer (medical physicist)
 - 2 clinical reviewers (radiologist)
 - Pulse sequence and image contrast
 - Positioning and anatomic coverage
 - Artifacts
 - Spatial and temporal resolution
 - Exam ID

Physicist Role in Accreditation

- Breast MRI
 - Qualified medical physicist/MR scientist is responsible for the conduct of all surveys of the breast MRI equipment
 - Medical physicist/MR scientist must be present during the surveys
 - Provide a report of the conclusions with signature

Qualifications	Medical Physicist	MR Scientist
Initial	<p><u>Board Certified</u></p> <ul style="list-style-type: none"> • Certified in Diagnostic Radiological Physics, Diagnostic Medical Physics, or Radiological Physics by the American Board of Radiology; in Diagnostic Imaging Physics or Magnetic Resonance Imaging Physics by the American Board of Medical Physics; or in Diagnostic Radiology Physics or Magnetic Resonance Imaging Physics by the Canadian College of Physicists in Medicine <p>OR</p> <p><u>Not Board Certified in Required Subspecialty</u></p> <ul style="list-style-type: none"> • Graduate degree in medical physics, radiologic physics, physics, or other relevant physical science or engineering discipline from an accredited institution, <i>and</i> • Formal coursework in the biological sciences with at least <ul style="list-style-type: none"> – 1 course in biology or radiation biology, and – 1 course in anatomy, physiology, or similar topics related to the practice of medical physics • 3 years of documented experience in a clinical MRI environment <p>OR</p> <p><u>Grandfathered</u></p> <p>Conducted surveys of at least 3 MRI units between January 1, 2007 and January 1, 2010</p>	<ul style="list-style-type: none"> • Graduate degree in a physical science involving nuclear MR (NMR) or MRI • 3 years of documented experience in a clinical MRI environment
Continuing Experience	Upon renewal, 2 MRI unit surveys in prior 24 months	
Continuing Education	Upon renewal, 15 CEU/CME (1/2 Cat 1) in prior 36 months (must include credits pertinent to the accredited modality)	

Physicist Role in Accreditation

- Breast MR
 - Sites must submit MRI Equipment Evaluation Summary form
 - Evaluation of Site's Technologist QC Program form
 - Evaluate the tech's performance of Artifact Analysis
 - The QC manual's "Evaluation of Site's Technologist QC Program" form now includes a place to mark pass/fail results
 - Entire most recent Annual System Performance Evaluation report
 - Corrective action taken if any problems are noted (i.e. test failures or data outside of action limits)

Stereotactic Breast Biopsy Accreditation



Physicist Role in Accreditation

Medical Physicist

A medical physicist performing surveys of stereotactic breast biopsy units in any setting must be currently qualified under MQSA and meet the following minimum criteria:

Qualifications	Medical Physicist
Initial	Qualified to perform mammography surveys under MQSA AND Performed 1 hands-on stereotactic breast biopsy physics survey under a qualified medical physicist or at least 3 independent surveys prior to 6/1/97
Continuing Experience	Upon renewal, 2 stereotactic breast biopsy physics surveys over a 24-month period
Continuing Education	Upon renewal, 3 CEUs in stereotactic breast biopsy every 3 years

Physicist Role in Accreditation

- Stereotactic Breast Biopsy
- The medical physicist must perform the following QC tests when the equipment is installed and at least annually thereafter:

Physicist Role in Accreditation

- Annual System Performance Evaluation
 1. Stereotactic Breast Biopsy Unit Assembly
 2. Collimation Assessment
 3. Focal Spot Performance and System Limiting Resolution
 4. kVp Accuracy and Reproducibility
 5. Beam Quality Assessment (Half-Value Layer Measurement)
 6. Automatic Exposure Control (AEC) System or Manual Exposure Performance Assessment
 7. Receptor Speed Uniformity
 8. Breast Entrance Exposure, Average Glandular Dose and Exposure Reproducibility
 9. Image Quality Evaluation
 10. Artifact Evaluation
 11. Localization Accuracy Test

Physicist Role in Accreditation

- Average glandular dose
 - Check the technique (including matrix) actually used for stereo procedures
 - Advise them how to lower dose as necessary
 - Facilities have been failing for dose
 - A higher technique is used than that tested by the medical physicist

Physicist Role in Accreditation

Tips

- Complete the ACR Equipment Evaluation/QC Test Summary Forms and give to clients with full survey report
 - Forms are available from www.acr.org or ACR QC manuals
 - Summarizes results in simple pass/fail format
 - Speeds ACR review of application
 - Helps clients get through accreditation quicker
 - Makes you look good!

Physicist Role in Accreditation

- Evaluate the technologist QC program and document results
- Write legibly!



Future of Accreditation

- Electronic upload of images
- QC Manual for CT



Why choose ACR?

- Focused on quality and safe imaging
- Peer-reviewed assessment of clinical and phantom images
- Dedicated team of technologists and associates that can guide sites through every step of the process

CALL US!

Why Choose ACR?

- Developed by radiologists and physicists
- Accreditation review completed generally within 90 days of image submission
- No pre-accreditation on-site survey
- Save 10% on three or more modalities (excluding mammography)
- Multi-site, multi-modality pricing
- Custom marketing toolkit

Summary

- Physicist play critical role in success of ACR Accreditation
- Review www.acr.org for most updated set of instructions
- Communicate with facility
- Complete summary forms and submit with **full** survey reports

Thank you!

Questions?

Accreditation hotline:
1-800-770-0145

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