AAPM Annual Meeting

ACR Accreditation Updates in CT, Ultrasound, Mammography and MRI:

ACR Accreditation Update in CT

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Learning Objective

- To understand the requirements of the ACR CT accreditation program, including updates to the QC manual as well as updates through the FAQ process.

ACR CT Accreditation Program

- The CT Accreditation Program involves the acquisition of clinical and phantom images, dose measurements and the submission of scanning protocols.

ACR CT Accreditation Program: What's New?

- The GOALS remain the same
- The CONTEXT has changed
- CTAP started as a VOLUNTARY program
- 1-1-12 : Medicare Part B REQ'D accreditation by a CMMS approved body
  - ACR CTAP was one of the approved bodies

ACR CT Accreditation Program: What's New?

- In CA, State Law REQUIRED accreditation by one of the bodies recognized by CMS
- That clause went into effect July 1, 2013
- Again, not REQUIRED to be ACR accredited, but it was one of the approved accrediting bodies.

ACR CT Accreditation Program: What's New?

- The GOALS remain the same
- SOME aspects have changed
- A few highlights:
  - Electronic Submission
  - Requirements
  - QC manual
- http://www.acr.org/Quality-Safety/Accreditation/CT

ACR CT Accreditation Program: What's New?

- ELECTRONIC SUBMISSION OPTION
- Submission can now be completely electronic (no film, no CDs)
- This includes forms, clinical images, phantom images and dosimetry spreadsheets
- Note that CD Submission is still available

ACR CT Accreditation Program: What's New?

- Physics (Phantom Portion) testing is unchanged
- For each protocol being submitted:
  - CT number accuracy
  - Low-contrast resolution
  - Image uniformity
  - CTDI

ACR CT Accreditation Program: What's New?

- Some values HAVE CHANGED

Note: The pediatric head and abdomen dose reference values and pass/fail criteria have been adjusted and are effective July 1, 2013.

ACR CT Accreditation Dose Pass/Fail Criteria and Reference Levels

Examination	Pass/Fail Criteria $CTDI_{vol}$ (mGy)	Reference Levels $CTDI_{vol}$ (mGy)
Adult Head	80	75
Adult Abdomen	30	25
Pediatric Head (1 year old)	40	35
Pediatric Abdomen (40-50 lb.)	20	15

ACR CT Accreditation Program: What's New?

- Some values HAVE CHANGED
- PEDS CNR values changed as well

Scan protocol	Pass/Fail Criteria CTDIvol (mGy)	Reference Value CTDIvol (mGy)	CNR
Adult Head	80	75	1.0
Pediatric Head	40	35	0.7
Adult Abdomen	30	25	1.0
Pediatric Abdomen	20	15	0.4

ACR CT Accreditation Program: What's New? QC Program

- New Requirements
- Effective Dec 1, 2013 all ACR CT accredited sites must maintain a documented quality control (QC) program and must comply with the min. frequencies of testing outlined in the manual

ACR CT Accreditation Program: What's New? QC Manual

- CT QC manual was released 12-1-12
- Updated August 2013
- Available on ACR CTAP swebsite
- http://www.acr.org/Quality-Safety/Accreditation/CT

ACR CT Accreditation Program: QC Manual

- Three main sections:
  - Radiologist Section
  - Technologist Section
  - Medical Physicist Section

ACR CT Accreditation Program: QC Manual – Radiologist Section

- Definition of Quality Assurance
- Definition of Equipment Quality Control
- Responsibilities of the Radiologist
- Responsibilities of the Quality Control Tech.
- Responsibilities of Qualified Med Physicist

ACR CT Accreditation Program: QC Manual – Radiologist Section

Table 1. QC Test Frequency

TEST	FREQUENCY
Medical Physicist's Survey	
Review of Clinical Protocols	Annually
Scout Prescription and Alignment Light Accuracy	Annually
Image Thickness	Annually
Table Travel Accuracy	Annually
Radiation Beam Width	Annually
Low-Contrast Performance	Annually
Spatial Resolution	Annually
CT Number Accuracy	Annually
Artifact Evaluation	Annually
CT Number Uniformity	Annually
Dosimetry	Annually
Gray Level Performance of CT Acquisition Display Monitors	Annually
Radiologic Technologist's QC	
Water CT Number & Standard Deviation	Daily
Artifact Evaluation	Daily
Wet Laser Printer Quality Control	Weekly
Visual Checklist	Monthly
Dry Laser Printer Quality Control	Monthly
Display Monitor Quality Control	Monthly

ACR CT Accreditation Program: QC Manual – Technologist Section

- Technologist Daily Quality Control
- Technologist Weekly Quality Control
- Technologist Monthly Quality Control

ACR CT Accreditation Program: QC Manual – Technologist Section

Table 1. Technologist's QC Tests: Minimum Frequencies

PROCEDURE	MINIMUM FREQUENCY	APPROXIMATE TIME IN MINUTES
Water CT Number and Standard Deviation	Daily	5
Artifact Evaluation	Daily	5 (or less)
Wet Laser Printer Quality Control	Weekly (if film is used for primary interpretation)	10
Visual Checklist	Monthly	5
Dry Laser Printer Quality Control	Monthly (if film is used for primary interpretation)	10
Display Monitor Quality Control	Monthly	5

ACR CT Accreditation Program: QC Manual – Physicist Section

- Annual Tests
  - Protocol Review
  - Scout Prescription and Alignment Light Accuracy
  - Image Thickness
  - Table Travel Accuracy
  - Radiation Beam Width
  - Low Contrast Performance

ACR CT Accreditation Program: QC Manual – Physicist Section

- Annual Tests
  - Protocol Review
  - Scout Prescription and Alignment Light Accuracy
  - Image Thickness
  - Table Travel Accuracy
  - Radiation Beam Width
  - Low Contrast Performance

ACR CT Accreditation Program: QC Manual – Physicist Section

- Annual Tests (continued)
  - Spatial Resolution
  - CT Number Accuracy
  - Artifact Evaluation
  - CT number uniformity
  - Dosimetry
  - Gray Level Performance of CT Acquisition Display Monitors

ACR CT Accreditation Program: Frequently Asked Questions (FAQs)

- CTAP has used FAQs since the beginning
- FAQs for accreditation submissions
- *NEW* FAQs for QC manual as well
  - Clarifications
  - Scanner specific responses (often in conjunction with manufacturers)
  - http://www.acr.org/~/media/ACR/Documents/Accreditation/CT/CT%20QC%20Manual%20FAQ%2081613%20Final.pdf

The ACR CT Accreditation Program's CTDIvol Pass/Fail Limit for Pediatric Head is now:

1. 10 mGy
2. 20 mGy
3. 30 mGy
4. 40 mGy
5. As Low As Reasonably Achievable

The ACR CT Accreditation Program's CTDIvol Pass/Fail Limit for Pediatric Body is now:

1. 10 mGy
2. 20 mGy
3. 30 mGy
4. 40 mGy
5. As Low As Reasonably Achievable

The ACR CT Accreditation Program's CNR Value for Pediatric Head is now:

1. 0.1
2. 0.4
3. 0.7
4. 1.0
5. As High As Reasonably Achievable

The ACR CT Accreditation Program's CNR Value for Pediatric Body is now:

1. 0.1
2. 0.4
3. 0.7
4. 1.0
5. As High As Reasonably Achievable

The ACR CT Accreditation Program's QC Manual Requires

1. Monthly Review of All Protocols
2. Monthly Evaluation of CT Number of Water
3. Annual Review for Artifacts
4. Annual Evaluation of Radiation Beam Width
5. Daily Review of CT Doses