Manufacturer Specific Considerations for ACR Accreditation

While the specifications and instructions for scanning the designated phantom to achieve ACR Accreditation of CT scanners are available from the ACR web site, the actual implementation on individual scanners is sometimes problematic. A general discussion of the common instructions and parameters for image quality acquisition and dose measurements will be covered initially followed by manufacturer specific instructions for several models of scanners. Information provided by Toshiba, Siemens, Philips and GE will be presented relative to individual models of scanners.

The current instructions for acquiring image quality scans using the designated Gammex CT phantom are to follow the protocols currently in use at the facility for Adult Head (Cerebrum portion), Adult Abdomen, and, if the facility provided pediatric services, Pediatric Abdomen and Pediatric Head. The majority of facilities utilize helical protocols for abdomen scans and many use helical protocols for head scans. This methodology has made the acquisition of the image quality images easier than under the prior set of instructions for image quality acquisition. However, the requirement for acquiring all dose measurements in the axial mode is still in place. Many physicists struggle in the conversion of helical scan protocols to the appropriate axial mode for dose measurements. On some models of scanners, the collimation systems provided by the manufacturer do not allow the same detector thicknesses and/or number of detectors in the axial mode as is available in the helical mode. Information provided by each of the manufacturers will be presented to assist practicing physicists in this conversion of the helical protocols to the appropriate axial protocols to be used for dose measurements.

Objectives of this presentation:
1: Attendees will be aware of the requirements for accreditation for each of the image quality modules required by the ACR independent of individual scanner model.
2: Attendees will be aware of the dose limits applicable to the designated 16 cm and 32 cm phantoms used for CTDI measurements for head and adult abdomen protocols.
3: Attendees will be aware of the recommended conversion methodologies for helical to axial protocols dependent on specific manufacturer and model of CT scanner.
4: Attendees will be aware of collimation and detector configurations of various CT scanner models available for use with helical and axial protocols.