An overview of the CT protocol review process at UT MD Anderson Cancer Center

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CT Protocol Review

• Two distinct purposes
  – Clinical optimization
  – Regulatory/accreditation

CT Protocol Review for Clinical Optimization

• Depends on Radiologist Section
  – For most sections:
    – When a radiologist complains about a specific exam (QA Report)
    – Protocol is reviewed by the physicist & technologist team together
    – Relevant adjustments appear promising, a new draft protocol created
    – Some number of patients scanned with draft protocol
    – After radiologist final approval
  – Process may get stuck here
  – New protocol locked in place and populated.

Assumes – radiologist represents section regarding this protocol
CT Protocol Review for Clinical Optimization

- Current example (7/28/16)
- Maxillofacial exam QA report (neuroradiologist):
  - “The brain CT recon is non-diagnostic”
  - Maxillofacial CTDIvol = 14 mGy
  - Routine brain CTDIvol = 65 mGy
  - Not real surprising…
  - Decided to delete the brain recon in this protocol
  - Made a few other adjustments at the same time…

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CT Protocol Review for Clinical Optimization

- Abdominal Imaging Section (40+ radiologists)
  - Specific committee charged with CT protocol “QA”
  - Meets monthly to review protocols and progress
  - Radiologists (core group plus few interested in specific issues)
  - CT physicists
  - CT Technologist Supervisors
  - Nursing representative
  - Agenda prepared
  - Action items decided
  - Follow-up by radiologists (prodding
  - Most successful approach so far
  - Highly dependent on radiologist leaders

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CT Protocol Review for Clinical Optimization

Examples
- Implementation of organ dose modulation
  - Varies with vendor
  - “Script” for technologists
- Adjustments for large patient abd/pelvis
  - Increase to 140kVp
  - 150 ml IV contrast @4mL/sec
  - Process with Veo if requested
    (requires background support/training)

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CT Protocol Review - meet State & Accreditation Rules

- Required by Texas regulations, Joint Commission, and ACR CTAP
  - TX
    - Every CT protocol reviewed at least every 14 months
    - Group specified as: Radiologist, Physicist, Radiation Safety Officer
    - Lots of other CT related requirements
  - JC
    - CT protocols reviewed on regular timeframe determined by facility
    - Group specified as: Radiologist, Lead Technologist and Physicist
  - ACR CT Accreditation Program
    - CT Perfusion, Adult Head & Abdomen, Ped Head & Abdomen, Hi-Res Chest
    - CT protocols reviewed on annual basis
    - Group specified as: Radiologist, Technologist and Physicist

CT Protocol Review - meet State & Accreditation Rules

- How do we perform these reviews?
  - Generally high level, in groups (modular)
  - Look for consistency in acquisition and reconstruction parameters
  - Check to see that CT Dose Check Notification Values are defined (need this to comply with a dose monitoring state regulation)
  - Check to be sure image destinations are appropriate
  - Confirm dose level is reasonable for that exam
Lessons Learned

- **CT Protocol Review** is
  - Painful but effective. (Example – combining adb/pelvis passes)
  - Has resulted in many noticeable improvements in clinical image quality.
  - Is definitely a team sport. Need ALL of the players.
  - An evolving process.

- **Radiologist feedback is REQUIRED** for success of optimization process

- **Need better and more available tools for this activity!**
  - DICOM Supplement 121 may provide some assistance.
  - Both ‘machine language’ info AND patient information is required in practice.