AAPM Spring Meeting 4/7/2018

Joint Commission Update: Diagnostic Imaging Services Standards, Survey Results, Fluoroscopy

Objectives:
- Review of imaging standards
- Present data for diagnostic imaging services RFIs scored in 2017
- Provide examples specific items scored in diagnostic imaging
- Describe proposed fluoroscopy standards and approval process

Where are the standards that can be applied to imaging?

- Environment of Care Chapter
- Human Resources
- Medical Staff
- Medication Management
- Leadership
- Provision of Care, Treatment and Services
- Performance Improvement

Where are the standards that can be applied to imaging?

- Environment of Care
  - 02.01.01 Manages safety & security risks
    - EP8 Controls access security sensitive areas
    - EP11 Responds to product notices and recalls
    - EP14 Manages MRI safety risks (patients/staff)
    - EP 16 Manages MRI safety risks (access control/ signage)
Where are the standards that can be applied to imaging?

**Environment of Care**
- 02.02.01 Manages risks: hazardous materials and waste
  - EP3 Written procedures (precautions/PPE) response hazardous material, waste spills, exposures
  - EP6 Minimizes risk selecting, handling, storing, transporting, using & disposing RA material
  - EP7 Minimizes risk selecting/using hazardous energy sources (ionizing, nonionizing)

- 02.04.01 Manages medical equipment risks
  - EP2 Non-deemed: inventory all/selected; deemed: inventory all
  - EP4 ID activities/frequencies (writing) maintaining, inspecting, testing
  - EP5 Deemed status: manufacturer’s recommendations (medical lasers, imaging & radiologic)

- 02.04.01 Manages medical equipment risks
  - EP9 Written procedures medical equipment failure (emergency clinical interventions, backup equipment)
  - EP10 IDs QC & maintenance activities (frequency) to maintain image quality (CT, MRI, NM, PET)
Where are the standards that can be applied to imaging?

**Environment of Care**

- 02.04.03 Inspects, tests, maintains medical equipment
  - EP 1 Non-deemed: before initial use (safety, operational, functional checks)
  - Deemed: before initial use & after major repairs or upgrades
  - EP 16 Qualified staff inspect, test, calibrate NM equipment annually (documented)

- EP 18 Maintains quality CT, PET, MRI, NM images produced
- EP 20 Annually medical physicist measures CTDI 4 protocols; verifies measured/displayed within 20% (systems capable, not dental cone beam, accountable may have assistance)

Where are the standards that can be applied to imaging?

**Environment of Care**

- 02.04.03 Inspects, tests, maintains medical equipment
  - EP 21 Annually diagnostic medical physicist CT tests
  - EP 22 Annually diagnostic MP/MRI scientist MRI tests
  - EP 23 Annually diagnostic MP/NM physicist tests all NM imaging equipment
  - EP 24 Annually diagnostic MP tests PET
  - EP 25 CT, PET, NM, MRI tests acquisition monitors

Where are the standards that can be applied to imaging?

**Environment of Care**

- 02.04.03 Inspects, tests, maintains medical equipment
  - EP 1 Non-deemed: before initial use (safety, operational, functional checks)
  - Deemed: before initial use & after major repairs or upgrades
  - EP 16 Qualified staff inspect, test, calibrate NM equipment annually (documented)

- EP 2 Maintains quality CT tests
- EP 22 Annually diagnostic MP/MRI scientist MRI tests
- EP 23 Annually diagnostic MP/NM physicist tests all NM imaging equipment
- EP 24 Annually diagnostic MP tests PET
- EP 25 CT, PET, NM, MRI tests acquisition monitors

Where are the standards that can be applied to imaging?

**Environment of Care**

- 02.06.05 Manages environment: demolition, renovation, new construction
  - EP 4 CT, PET, NM structural shielding design assessment
  - EP 6 CT, PET, NM after work BEFORE clinical use conducts radiation protection survey
Where are the standards that can be applied to imaging?

**Environment of Care**

- 03.01.01 Staff/LIP familiar w/ roles/responsibilities relative to EC
- EP 1 Staff responsible: maintenance, inspection, testing, use medical equipment.....safe handling hazardous materials...competent, receive continuing education/training
- EP 2 Staff/LIP describe/demonstrate actions in EC incident

**January 1, 2018**

EC.01.01.01 EP 3: The organization has a library of information regarding inspection, testing, and maintenance of its equipment and systems. 
Note: This library includes manuals, procedures provided by manufacturers, technical bulletins, and other information.

Where are the standards that can be applied to imaging?

**Environment of Care**

- 04.01.01 Collect information to monitor conditions in environment
- EP 1 Establish process continually monitor, internally report & investigate
  - Hazardous materials/waste spills & exposures
  - Medical/laboratory equipment management problems, failures, use errors

**Human Resources**

- 01.05.03 Ongoing education and training
- EP 14 Diagnostic CT technologists annual; dose optimization, safe operation equipment used
- EP 25 MRI technologists annual; patient screening, patient/equipment positioning, classification, procedures urgent/emergent care, system shutdown, hearing protection, patients with claustrophobia, anxiety, emotional distress
Where are the standards that can be applied to imaging?

**Leadership**
- 04.03.09 Contractual agreement; care, treatment, services provided safely/effectively
- EP 4 Monitor: establish expectations
- EP 5 Communicate expectation in writing
- EP 6 Evaluate relative to expectations
- EP 7 Take steps to improve if expectations not met

**Medical Staff**
- 03.01.01 Oversees quality of care, treatment, services
- EP 16 Deemed: determine qualifications radiology staff who use equipment & administer procedures (482.26(c)(2) TAG A-0547)
- EP 17 Deemed: Approves nuclear services doctor qualifications, training, functions, responsibilities NM staff

Where are the standards that can be applied to imaging?

**Medication Management**
- 06.01.01 Safely administers medication
- EP 13 Diagnostic RRx verify dose to be administered within 20% prescribed or within prescribed range
- Contrast

**Provision of Care, Treatment and Services (PC)**
- 01.02.15 Provides for diagnostic testing
- EP 5 Documents CTDI, DLP, SSDE every diagnostic CT study (exam specific, summarized series/anatomic area, in retrievable format
- EP 10 CT, MRI, NM, PET: prior to study verify correct patient, imaging site, positioning, CT protocol, CT scanner parameters
- EP 12 CT, MRI, PET, NM: consider patient age, prior studies/ most appropriate imaging exam
Where are the standards that can be applied to imaging?

Provision of Care, Treatment and Services (PC)
- 01.03.01 Plans patient care
- EP 25 Established/adopts diagnostic CT imaging protocols; current standards of practice; address clinical indication, contrast administration, age (adult or peds), patient size/ body habitus, expected CTDI range
- EP 26 Review/ keep current diagnostic CT imaging protocols; input interpreting physician, medical physicist, lead imaging technologist (current standards of practice/equipment used); frequency TBD by org

Performance Improvement
- 01.01.01 Collects data to monitor performance
- EP 46 Collects data MRI thermal injuries
- EP 47 Collects data: unintentional ferromagnetic objects; injuries ferromagnetic objects

Where are the standards that can be applied to imaging?

Performance Improvement
- 02.01.01 Compiles and analyzes data
- EP 6 Reviews/analyzes CTDiVol, DLP, SSDE diagnostic CT exceeded expected range in imaging protocols; compared to external benchmarks

Top Standards Compliance Data 2017
Top Standards Compliance Data 2017

MRI Standards scored 2017

CT Standards Scored 2018
Typical Surveyor Observations

**EC.02.01.01**
- Access to hot lab; after hours
  - Key code not changed; keys not returned
- Ferrous fire extinguishers Zone 3
- MRI doors unlocked or open w/o staff there
- Incomplete screening documents or policy
- Surveyor administrator allowed in Zone 4 w/o screen
- MRI staff could not articulate emergency procedure

**EC.02.02.01**
- No badges or not wearing
  - Checking with staff during tracer
- Policy annual apron inspection; not done
  - Lost apron policy

**EC.02.04.03**
- CT/ MRI QC not done according to policy
  - Policy: radiographic equipment -not done
- Looking at both PM and physicist survey
- Incomplete annuals
- Maintenance/ testing not meeting manufacturer’s recommendations

**PC.01.02.15**
- Siemens CT/ GE protocols
- Contrast discrepancies; not follow protocol
- No CT imaging protocols
- Insufficient contrast guidance
- Changes in protocols w no verifications, initials etc.
- No time frame for CT protocol review

**PI.01.01.01**
- No process for reporting thermal injuries
  - Incident reports; no data collected/analyzed
- No process for ferromagnetic objects
  - No process for CTDI data
  - Collected data but didn’t review/ analyze
The Joint Commission develops and updates its standards for health care organizations that seek or maintain accreditation, based on current science to address emerging health care quality issues. These voluntary standards are established after extensive literature review, input from national experts and other stakeholders.

The process involves:
- Extensive research and literature review
- A technical advisory panel representing imaging leadership and clinicians, researchers and practitioners from leading hospitals and other organizations across the country.
- A standards review panel to provide real-world practice perspectives and Input on the new and revised standards.
Environment of Care (EC) Chapter
EC.02.04.03
1. The hospital inspects, tests, and maintains medical equipment.

24. For hospitals that provide fluoroscopic services: At least annually, a diagnostic medical physicist or health physicist conducts a performance evaluation of fluoroscopic imaging equipment. The evaluation results, along with recommendations for correcting any problems identified, are documented. The evaluation includes an assessment of the following:

- Beam alignment and collimation
- Tube potential/kilovolt peak (kVp) accuracy
- Beam filtration (half-value layer)
- High-contrast resolution
- Low-contrast resolution
- Exposure rate for typical exams
- Maximum exposure rate
- Patient dose display accuracy (where applicable)
- Automatic dose rate and automatic exposure control performance

Human Resources (HR) Chapter
HR.01.05.03
195. Staff participate in ongoing education and training.

14. The hospital verifies and documents that individuals who perform diagnostic computed tomography (CT) and/or fluoroscopic examinations participate in ongoing education that includes annual training on the following:

- Radiation dose optimization techniques and tools for pediatric and adult patients addressed in the Image Gently, Image Gently-Step Lightly, and Image Wisely campaigns
- Safety procedures for operation of the types of CT and fluoroscopy equipment they will use

Note 1: Information on the Image Gently, Image Gently-Step Lightly, and Image Wisely initiatives can be found online at http://www.imaggently.org and http://www.imagewisely.org, respectively.

Note 2: This element of performance does not apply to CT systems used for therapeutic radiation treatment planning or delivery, or for calculating attenuation coefficients for nuclear medicine studies.

Note 3: This element of performance does not apply to dental cone beam CT radiographic imaging studies performed for diagnosis of conditions affecting the maxillofacial region or to obtain guidance for the treatment of such conditions.

Leadership (LD) Chapter
LD.04.01.05

25. For hospitals that provide fluoroscopic services: The hospital designates an individual to serve as the radiation safety officer. This individual is responsible for making certain that radiologic services are provided in accordance with law, regulation, and organizational policy.

Provision of Care, Treatment, and Services (PC) Chapter
PC.01.02.15
261. The hospital provides for diagnostic testing.

13. For hospitals that provide fluoroscopic services: The reference-air kerma, cumulative-air kerma, or kerma-area product are documented in a retrievable format. For fluoroscopy equipment that is not designed to display reference-air kerma, cumulative-air kerma, or kerma-area product, fluoroscopy time and number of images acquired are documented in a retrievable format, such as a picture archiving and communication system.
25. The hospital establishes or adopts diagnostic computed tomography (CT) and fluoroscopy imaging protocols based on current standards of practice, which address key criteria including the following:
- Clinical indication
- Contrast administration
- Age (to indicate whether the patient is pediatric or an adult)
- Patient size and body habitus
- For diagnostic computed tomography: The expected radiation dose index range
- For fluoroscopy: Expected ranges for the reference-air kerma, cumulative-air kerma, kerma-area product, and fluoroscopy time. For fluoroscopy equipment that is not designed to display reference-air kerma, cumulative-air kerma, or kerma-area product, expected ranges for fluoroscopy times are addressed in protocols.

Note: This element of performance does not apply to dental cone beam CT radiographic imaging studies performed for diagnosis of conditions affecting the maxillofacial region or to obtain guidance for the treatment of such conditions.

26. Diagnostic computed tomography (CT) and fluoroscopy imaging protocols are reviewed and kept current with input from an interpreting physician, medical physicist, and lead imaging technologist to ensure that they adhere to current standards of practice and account for changes in CT and fluoroscopy imaging equipment. These reviews are conducted at time frames identified by the hospital. (For hospitals that use Joint Commission accreditation for deemed status purposes, refer to MS.06.01.03, EP 9 for supervision of radiologic services)

Note: This element of performance does not apply to dental cone beam CT radiographic imaging studies performed for diagnosis of conditions affecting the maxillofacial region or to obtain guidance for the treatment of such conditions.

30. For hospitals that provide fluoroscopic services: The hospital establishes criteria for patient follow-up to assess for adverse radiation effects when the reference-air kerma, cumulative-air kerma, kerma-area product, or fluoroscopy time exceeded expected ranges identified in fluoroscopy imaging protocols. (See also PI.02.01.01, EP 29)

20. For hospitals that provide fluoroscopic services: The hospital reviews and analyzes incidents where the reference-air kerma, cumulative-air kerma, kerma-area product, or fluoroscopy time exceeded expected ranges identified in fluoroscopy imaging protocols. For fluoroscopy equipment that is not designed to display reference-air kerma, cumulative-air kerma, or kerma-area product, only fluoroscopy times that exceeded expected ranges are reviewed and analyzed by the hospital. (See also PC.02.01.01, EP 30)
Working Timeline

4/23 Submit final standards to Dir for approval
4/30 Send 60-day CMS notification
5/4 Send Perspectives article to PUBS for July issue

July 2018 – Post pre-pub standards
Jan 1, 2019 Implementation date

Questions?

Thank You!

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