Fluoroscopy Training and Compliance – Experience of a Large Academic Institution

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Outline

- Regulations regarding fluoroscopy training
- Identifying who requires training
- Training models
- Challenges with compliance
- Delineation of Privileges

Radiation induced skin injury: Malpractice issues

Cardiac Catheterization Procedure

- Initial: 173 min fluoroscopy and number of cine runs
- 5 months later: 74 min fluoroscopy & 2400 cine images (~1.5 min of cine run @ 30 fps)
- Severe skin injury, underwent extensive skin grafting
- Malpractice lawsuit for negligence and not informing about possibility of skin injury
- Jury awarded $1,000,000 in compensation

Berlin L, AJR: 177, 2001
Skin Injury Caused Due to Malfunction of X-ray Equipment During RFA


Maryland Regulations regarding Fluoroscopic Users

• F.5 (n) Qualifications for Users who energize Fluoroscopic systems
  – By December 31, 2005 the registrant shall ensure that only licensed practitioner of healing arts or a radiological technologist be allowed to energize fluoroscopic x-ray systems
  – All persons energizing these systems shall have completed at least four hours of training as specified in F.5 (n)(2) prior to clinical use of a fluoroscopic system, or provide documentation to demonstrate completion of four hours of training as specified in F.5 (n)(2)

www.mde.maryland.gov

F.5 (n) (2): Topics to be included in the training

• Biological effects of x-ray
• Principles of radiation protection
• Factors affecting fluoroscopic outputs
• Dose reduction techniques
• Principles and operation of fluoroscopic systems and outputs of each operational mode

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F.5 (n) (3): Continuing Medical Education

- Registrant shall maintain records to demonstrate a minimum of one hour of in-service training for all users who energize fluoroscopic system every 24 months in fluoroscopic radiation safety and patient dose management

F.5 (n) (4): Documentation Record Keeping

- Registrant shall maintain records pertaining to the requirements of sections F.5 (n)(1), F.5 (n)(2) and F.5 (n)(3) for review for three years

Exempt to Regulatory Requirements

- Registrant may exempt from requirements of F.5(n)(1) through F.5(n)(4):
  - Board certified radiologists
  - Fluoroscopy systems
  - Licensed practitioners of radiation simulators
  - Physicians operating c-arms (mini) for imaging extremities only
Instructions for ON-LINE fluoroscopy radiation safety training

- The link for safety classes is: http://www.hopkinsmedicine.org/hse/training/
- Select “Access training”
- Select “Online courses”
- Select “Minimizing Risks from Fluoroscopy”
- LOG IN
Delineation of Privileges (DOPs)

- Ionizing Radiation: X-ray Dose Used Classify

- Radiation Badge Compliance

- Fluoroscopic Minutes & Radiation Badge Readings of Radiology Fellows and Staff
  July 2001 - May 2001
<table>
<thead>
<tr>
<th>Areas of Interest</th>
<th>Cardiologists*</th>
<th>Radiology Fellows</th>
<th>Radiology Residents</th>
<th>General Pediatric Radiologists</th>
<th>Neuro Radiologists</th>
<th>CVDL Physicians**</th>
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Penalty for unreturned badges

- $50 will be charged for each dosimeter not returned within 30 days after the monitoring period
- Radiation safety office will bill the department for the unreturned badges
- Enforcement started from January 2011

Joint Commission Sentinel Event Policy Compliance

How to Prepare for the Joint Commission's Sentinel Event Policy Pertaining to Protracted Fluoroscopy

<table>
<thead>
<tr>
<th>Level</th>
<th>Terrestrial guidelines to establish thresholds to track patient's unintended exposure during protracted fluoroscopy activities</th>
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<tbody>
<tr>
<td>Level I</td>
<td>With dose monitors: Cumulative dose &gt; 5,000 mrem</td>
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<td>Level II</td>
<td>Without dose monitors: All of the following: Fluoroscopy exposure &gt; 15 min, Cumulative dose &gt; 35 mrem, Age 70 years or older</td>
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Conclusions

• Many challenges exists in a large diverse academic institution
• Variety of training methods should be available
• Strong support from leadership is critical