

Creating a culture of constant dose awareness

May 26th, 2016 | 11:00am CST

Chicago IL | Gleacher Center

HCA[®] | Clinical Services Group
Clinical Resource Team



An industry under fire

THE CHALLENGE

Watershed Press and Regulatory Attention



FDA U.S. Food and Drug Administration
Protecting and Promoting Your Health

Safety Investigation
Update 11/9/2008



Doctors at
Cedars-Sinai

The New York Times
Radiation

By WALT BOON

American College of
Emergency Physicians
ADVANCING EMERGENCY CARE

FDA Warns
Radiation Overexposure



01/23/2008

in Perfusion Scans:

Consumer Reports

Expert • Independent • Nonprofit
ConsumerReports.org

Radiation

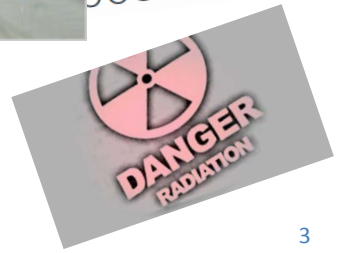
the U.S. Will Stem from CT
Per Year

MontMinnie.com
CT radiation

are Passes
inst CT
posure

ConsumerReports

The surprising dangers of CT scans and X-rays
Patients are often exposed to cancer-causing radiation for little
medical reason, a Consumer Reports investigation finds
Published: January 27, 2015 06:00 AM



Cancer, Cancer, Cancer

- 1.5% - 2% of all future cancers may be attributed to CT. -ICRP 2007, NEJM
- 4%-5% increase in relative risk for developing fatal cancer for every 1,000 mSv effective dose. – NRC 2009, NEJM
- CT listed as one of the top 2 environmental causes of Breast Cancer. – IOM 2009
- Increasing utilization of CT poses major public health concern in context of potential cancers.

An industry call to action

OUR RESPONSE

Overarching goals

1. We will not cause avoidable harm with medical radiation.
2. We will collect, record and audit dose indices for the purposes of performance improvement
3. We will foster a culture of constant dose awareness.

A single source of truth

- Organizational policy & procedure
 - Leadership participation and support is paramount
 - Identify and address areas of highest risks
 - Identify those accountable to the program and establish authority for oversight
 - Define minimum operating standards
 - Privileging, certification and competency expectations
 - QA/QC expectations for equipment
 - Define performance expectations
 - Data collection
 - Analysis, benchmarking, and performance improvement activities
 - Assessment, consent and reporting expectations

Provoking awareness and change

- Data collection and discovery
 - In multi-facility or system programs, data mapping is everything but avoid the detail trap. Start simple.
 - The absence of unique identifiers in the CV space will require standardized exam dictionaries. Start small.
 - Reporting exposure data correctly will challenge traditional CT workflows. Understand why.
- Benchmarking and building guardrails
 - Using local data sets (facility-specific data).
 - Using advisory data sets (system aggregate, external registries).
 - Global vs. procedure-specific approaches with SRDL in fluoro-guided interventions (FGI).
 - Specify units of measure used in your dose management strategy.
 - Dose alerts. What do they mean? Are they actionable?

Comprehensive management through...

1. **Justification** – Decreasing inappropriate exposure through the use of clinical decision support mechanisms in order entry workflows.
2. **Optimization** – Collecting, analyzing and benchmarking data to balance image quality with exposures that are as low as reasonably achievable.
3. **Limitation** – Contemplate the patient's cumulative exposure in decisions to pursue or delay non-emergent fluoro-guided interventions. In CT environments, consider alternate imaging modalities where appropriate based in the context of short-term cumulative exposures.



An Evolution of Culture @HCA

2008-09

- Neuro perfusion overexposure events at Cedar Sinai announced.
- Pediatric skin burn from CT Head at Mad River Community Hospital.
- National media attention on healthcare industry's responsibility for appropriate use

2010-12

- Workgroup was developed to evaluate organization's practices with managing Rad Safety.
- Radiation Right Policies in highest risk areas of CT and Fluoro were developed and released to include standard procedure for equipment maintenance, dose reporting, and requirements for education and competencies of technologists and physicians.

2013-15

- Identified need for automating the capture and audit of Radiation Doses and began evaluating potential software solutions.
- Dose management software selected and deployed to highest risk areas.

2016...

- Hardwiring the organization's dose management strategy into workflows and routine quality agendas.
- Harvesting insights from improved visibility to organizational exposure data.

Reference documents

APPENDIX

Applicable CT Exams – HCA Report Focus

<u>Standard DRL Definition Names:</u>	<u>Standard RPID</u>
1. Abd/Pelvis w	145
2. Abd/Pelvis wo	144
3. Abd/Pelvis wwo	198
4. Abd/Pelvis wo [Stone]	1521
5. C-Spine wo	21
6. Chest Angio [PE]	147
7. Chest w	18
8. Chest wo	16
9. Head wo	22
10. L-Spine wo	31
11. Peds Head (1-3yrs)	1803
12. Peds Head (4-10yrs)	1803
13. Peds Head (11-17yrs)	1803
14. Peds Abd/Pelvis (4-10yrs)	1924
15. Peds Abd/Pelvis (11-17yrs)	1924

Alert Justifications - 2016	Code
Patient Size/BMI	R1
CTDI Alert [Smart Prep/Stationary Series]	R2
DLP Alert [Extended Scan Range]	R3
DLP Alert [protocol requires routine delay series]	R4
DLP Alert [anatomic finding required delay series]	R5
Unanticipated Protocol Change [During Exam]	R6
Multi-study/combo exam	R7
Patient Positioning [Arms down, Decub, Isocenter, etc]	R8
Repeat Exam/Series [Image Quality]	R9
Repeat Exam/Series [Iodinated Contrast Complication]	R10
Repeat Exam/Series [Patient Compliance]	R11
Repeat Exam/Series [Patient Motion]	R12
Repeat Exam/Series [Physician Request]	R13
Cumulative Dose Alert [Equipment QA/QC]	R14
Errant Protocol Selection or Mapping Error	R15
Increased Attenuation [Surg Implants/Replacements]	R16
Complexity of Procedure [Operational environment]	R17
Complexity of Procedure [Team skill]	R18
Complexity of Procedure [Capability of available tools]	R19
Complexity of Procedure [Task difficulty]	R20
FPS/Cine Requirements	R21
Fluoro Time Only - No Dose Alert	R22
Unknown	R23
Other	R24 + Free Text