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April 23-26, 2017

The Sheraton
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Chicago, Ill.

Radiation Dose Management Requirements from MACRA and Joint Commission, Potential Effects on Reimbursement

*Radiation dose requirements are being slowly integrated
into key performance indicators and metrics tied to quality
and reimbursement*

Dominic Siewko, MBA CHP CSP
Global Product Manager
Philips Healthcare





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Session Description:

Radiation dose tracking and awareness requirements continue to mount globally from various regulatory sources. This session will review some case studies in MACRA reimbursement laws and Joint Commission compliance standards as they relate to radiation dose management.

Learning Objectives:

- Understand new MACRA radiation dose metrics
- A review of Joint Commission radiation dose requirements
- Tools and technology to assist you in compliance

How did we get here?

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October 2009
High profile CT
overexposures for
>200 patients

February 2010
FDA introduces "Initiative
to Reduce Unnecessary
Exposure to Radiation"

May 2011
ACR launches the
Dose Index
Registry

April 2013
MITA releases XR
29-2013 standard

July 2015
MACRA passed
into law

January 2010
NY Times blog
series "Radiation
Boom" begins

September 2010
CA RBH enacts
S.B. 1237

August 2011
JC issues Sentinel
Event Alert Issue
47

April 2015
JC releases new
Standards for CT
dose



There were some significant events that caused the increased awareness of patient X-ray dose management

Radiation dose management is big news

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USA
TODAY

Report: Thyroid cancer radiation a
public threat

FORUM: [Living with Cancer](#)

ARCHIVES: [It kills thyroid cancer, but is radiation safe?](#)

July 31, 2010

After Stroke Scans, Patients Face Serious Health Risks

By WALT BOGDANICH

Is Computed Tomography Safe?

Rebecca Smith-Bindman, M.D.

The Uncritical Use of High-Tech Medical Imaging

Bruce J. Hillman, M.D., and Jeff C. Goldsmith, Ph.D.

Radiation overdoses from CT scans lead to maladies in patients

Published: Sunday, August 01, 2010, 4:00 AM


The
New York
Times
The New York Times




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Low Dose is Big Business

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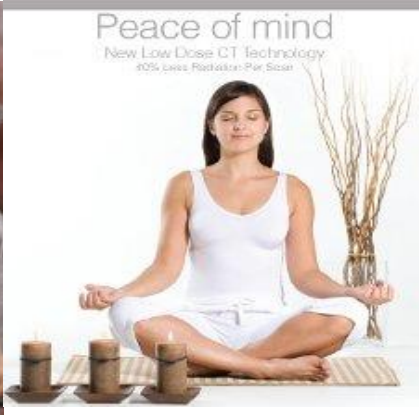
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Lower radiation dose.

 NATHAN LITTAUER
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New Low Dose CT Technology
80% Less Radiation Per Scan



50% OFF

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LESS IS BEST



The lowest dose
for your
highest priority.



 HOP
Radiology

Cascade Medical Imaging (CMI) a community partnership between Central Oregon Radiology Assoc. (CORA) and St. Charles Health System, introduces
LOW DOSE CT TECHNOLOGY
Low dose CT offers up to 40% lower radiation dose with a high quality CT scan

LOW DOSE HEAD CT = 30% LESS RADIATION	Call (541) 382-9383
LOW DOSE ABDOMINAL CT = 40% LESS RADIATION	To Schedule Your Low Dose CT Scan

40% LESS.
When it comes to radiation, less is more.

Southern Colorado's first and only low-radiation CAT scan systems.

Penrose-St. Francis Health Services
 Centum Health.



LOW RADIATION DOSE



LOW-DOSE CT at DIOS
giving your doctors the diagnosis they need.
giving you less of the radiation you don't.

Radiation dose management is big regulation

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- CMS' MACRA payment program
- American College of Radiology Appropriateness Criteria



- California SB AB510 – CT Dose Reporting
- Texas Administrative Code 25 TAC 289.227 CT Protocol Committee



- Image Wisely/Gently Awareness Program
- Medical Imaging & Technology Alliance (MITA) XR 29 Standard



- CT and Nuclear Medicine Standards
- Education requirements for Radiologic Technologists

What is the cancer risk of medical radiation?

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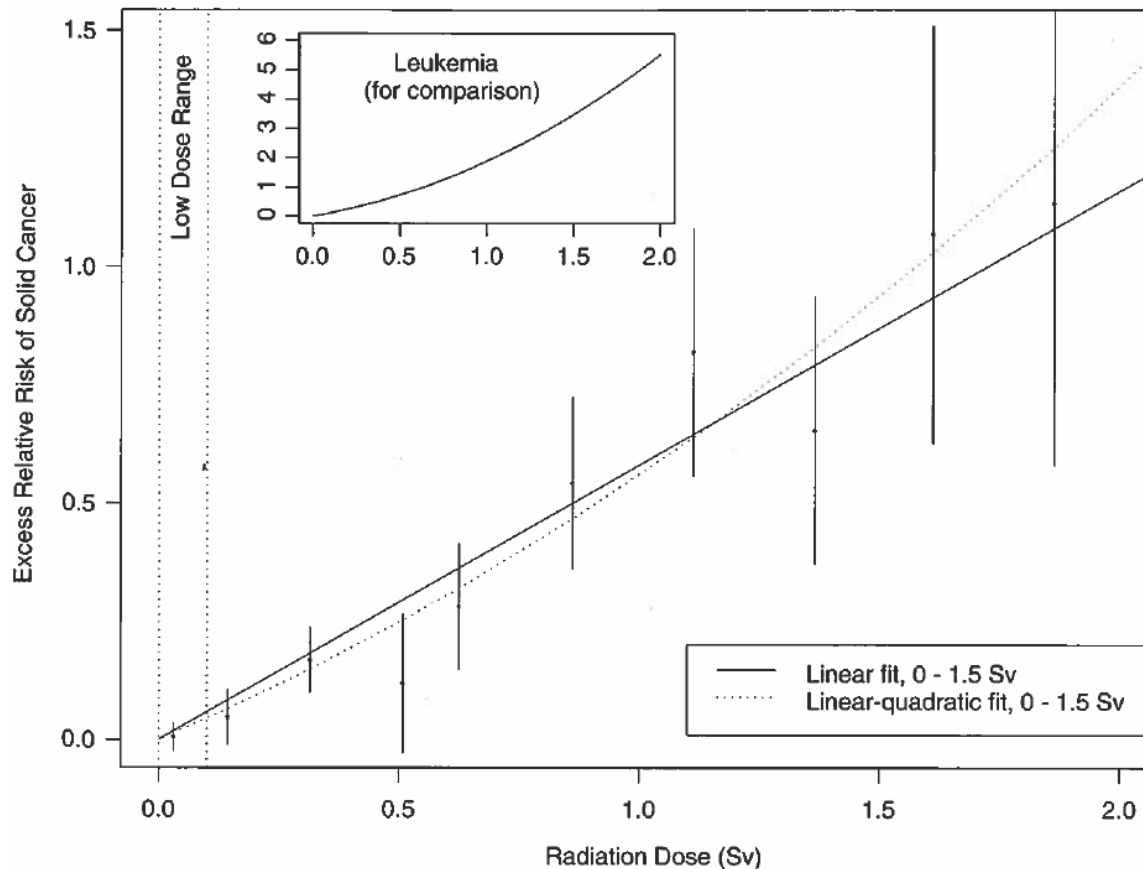
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- 1 CT scan (10 mGy) ~ 0.1% chance solid cancer
- Estimated 20% natural death rate from cancer in US
- Estimated 42% natural cancer incidence rate in US

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Joint Commission Requirements

Joint Commission



Requirement

New Requirements for Diagnostic Imaging Services

- Diagnostic Imaging Services requirements
- Effective September 1, 2016
- New requirements for:
 - Hospitals
 - Critical Access Hospitals
 - Ambulatory Care Centers

Provision of Care, Treatment and Services

- PI.01.02.15 Hospitals must document
 - Documents CTDI_{vol}, DLP or SSDE
 - Exam Specific
 - Easily Retrievable Format
 - Summarized by series or anatomic data

- PI.01.02.15 Prior to study verify
 - Correct Patient
 - Correct Imaging Site
 - Correct Patient Positioning
 - Correct Imaging Protocol (CT)
 - Correct Scanner Parameters (CT)



Provision of Care, Treatment and Services

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- PI.01.02.15 Exam Ordering
 - Access to patient history
 - Evaluate patient age and exam history
 - Use this information to influence exam ordering

- PI.01.02.15 Imaging Protocol Optimization
 - Review protocols against current industry practice
 - Contrast administration
 - Patient age, size, habitus
 - Expected dose index range
 - Clinical indication



Performance Improvement

- PI.02.01.01 Data Collection

- Review CT dose indexes (CTDIvol, DLP, SSDE) to determine if diagnostic CT examinations exceeded expected dose index ranges identified in protocols
- Compare to external benchmarks
- ACR DIR will show compliance with this requirement

Provision of Care, Treatment and Services

- PI.01.02.15 Imaging Protocol Optimization

- Frequent reviews of protocols
- Frequency determined by hospital
- Input from
 - Radiologist
 - Medical Physicist
 - Lead Technologist

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Element of Performance (Ambulatory)

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- HR.01.05.03 Education and Training
 - CT Technologist Annual Training
 - Radiation dose optimization techniques addressed in Image Wisely/Image Gently
 - Safe Procedures for operation of the types of CT equipment they use



Medication Management (Ambulatory)

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- Radiopharmaceutical Administration
 - Before administering verify +/- 20%
 - Verify dose is administered in prescribed range



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Provision of Care, Treatment and Services (Ambulatory)

- CT Exam dose must be documented
 - SSDE
 - DLP
 - CTDIvol
 - Must be exam specific, summarized by series or anatomical area and documented in a readily retrievable format
 - Nuc Med attenuation coefficient studies exempt
 - EMR next? (CA rule)

Provision of Care, Treatment and Services (Ambulatory)

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- Dose Justification requirements for CT, PET, Spect NM
 - Consider patient age and recent exam history
 - Focus on prevention of unnecessary duplication of these examinations
 - Gets back to the ICRP 103 principles:
 - Justification
 - Optimization





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Provision of Care, Treatment and Services

Standard HR.01.02.05

- CT Technologists must have ARRT or NMTCB certification or
- State license, Radiography ARRT certification with training
- Nuc Med certification with documented training on the provision of CT scans
- Rad Therapy/Dental/cone beam CT excluded including Nuc Med attenuation coefficient studies

Standard HR.01.05.03

- CT Techs participate in education to achieve advanced CT certification by Jan 1, 2018



Provision of Care, Treatment and Services

Standard MS.03.01.01 (Hospitals/CAH Hospital only)

- Medical staff determines the qualifications of the radiology staff who use equipment and administer procedures

Standard PC.01.03.01

- Diagnostic CT imaging protocols are reviewed and kept current with input from:
 - Physician
 - Medical Physicist
 - Lead technologist
- ✓ Reviews are conducted at time frames identified by facility
- ✓ Study showing cost around \$165K for 4 CTs with 30 protocols

Radiology and MACRA

Medicare Access and CHIP Reauthorization Act of 2015

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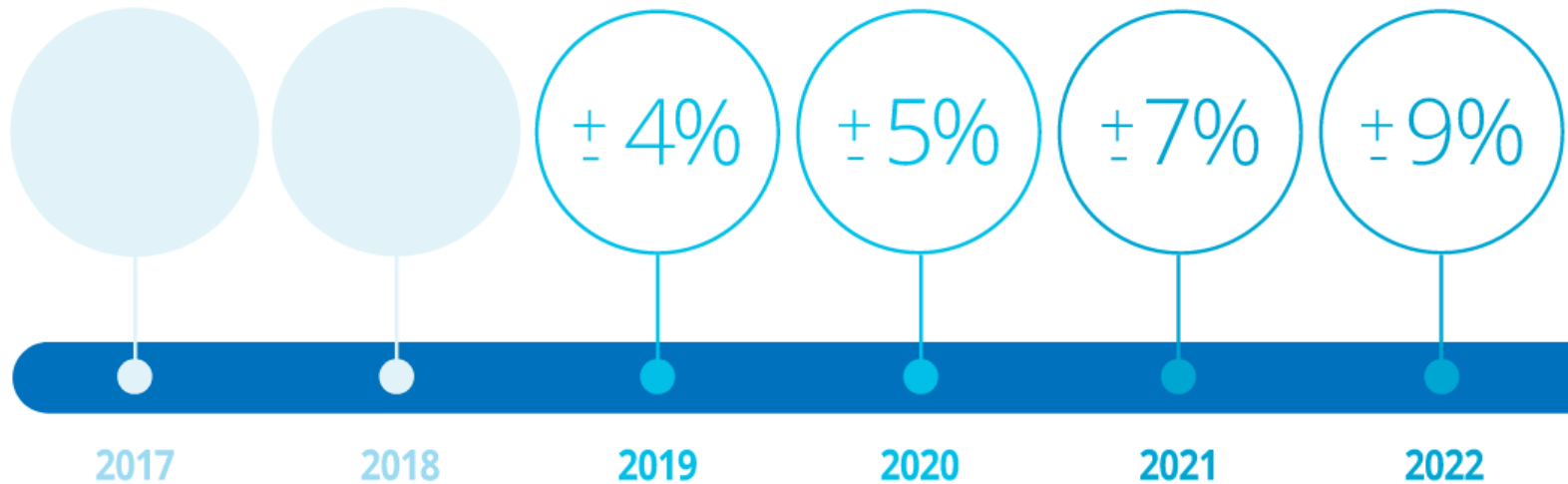
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- 15% of all high priority MACRA metrics are imaging related
- 22 out of 24 radiology metrics are registry based data submission (not EHR)
- In terms of # MACRA metrics to report, ACR leads all professional societies
- 10 metrics are directly related to radiation exposure
- <https://qpp.cms.gov/>

MACRA Focus Areas

There are three main focus areas for MACRA compliance in Radiology:

- Radiation Dose Management and Compliance
 - Tracking and reporting radiation exposure and participation in dose registries
- Recommendation follow-up compliance
 - Critical findings follow-up and integrated patient scheduling
- External image sharing
 - DICOM image sharing and track record of patient exam history to avoid repeat exams

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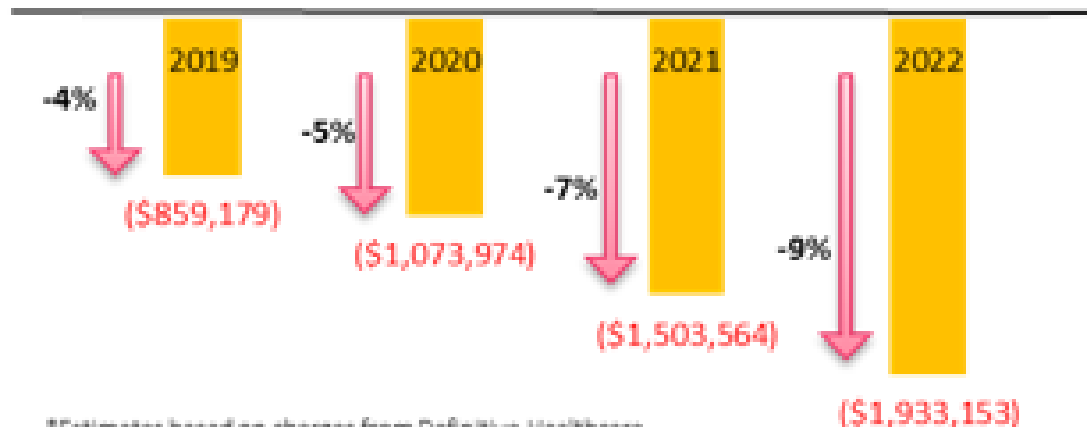
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System-wide additional revenue at-risk due to MACRA penalties

Sample IDN (20+ hospitals)



*Estimates based on charges from Definitive Healthcare

*The Cost of
Doing
Nothing...*

A typical 20
Hospital IDN
will lose
between \$1-3M
if they do
nothing...



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MACRA Metric N/A/359

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

Utilization of a standard nomenclature for CT imaging description

Metric:

Percentage of CT imaging reports for all patients, regardless of age, with the imaging study named according to a standardized nomenclature and the standardized nomenclature is used in institution's computer systems.

ACR Guidance Notes:

Numerator should be standardized nomenclature used in local CPUs including:

- Computerized physician ordering system
- Charge master
- Radiology Information System (RIS)
- Electronic Health Record (EHR)

MACRA Metric N/A/359

RadLex Playbook standardized naming convention, very useful for CT exam names

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Summary

Modality types **CT** Fluoroscopy Period from 1/24/2015 to 4/24/2017 Original exam names

Operations **9**

- Scanners 9
- Scanners with active data 9
- Study volume during time period 90821

Dose Alert

- CT Scan > 500 mGy ●
- CT Scan > 50 mSv ●

Exposure overview

Exam name ↑	Body region	Study volume	Is pediatric	Median CTDIvol (mGy)	12 month CTDIvol from [4/24/2017]	Median DLP (mGy*cm)	12 month DLP from [4/24/2017]
AB/PEL	Abdomen, Pelvis	1	No	19.56 ●		1625.88 ●	
ABD PELVIS	Abdomen, Pelvis	1	No	20.74 ●		925.94 ●	
ABD/PEL	Abdomen, Pelvis	1	No	1.87 ●		142.73 ●	
ABD/PEL W/O CT6	Abdomen, Pelvis	1	No	14.4 ●		809.9 ●	
ABD/PELVIS I- ABDOMEN		5		43.2 ●		1980.2 ●	
ABDOMEN^AAA (ADULT)	Abdomen, Pelvis	54	No	40.56 ●		843.56 ●	
ABDOMEN^AAA_WO (ADULT)	Abdomen, Pelvis	43	No	13.26 ●		697.02 ●	
ABDOMEN^ABD_PEL (CHILD)	Abdomen, Pelvis	23	Yes	7.97 ●		327.6 ●	
ABDOMEN^ABD_PEL_ROUTINE (ADULT)	Abdomen, Pelvis	3	No	6.9 ●		476.07 ●	
CT5		3		6.9 ●		476.07 ●	
ABDOMEN^ABD_PEL_ROUTINE_XXL (ADULT)	Abdomen, Pelvis	1	No	78.07 ●		2640.35 ●	

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MACRA Metric N/A/359

Radlex Playbook standardized naming convention for CT

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Summary

Modality types **CT** Fluoroscopy Period from 1/24/2015 to 4/24/2017 Original exam names

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- Scanners 9
- Scanners with active data 9
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Dose Alert

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Exposure overview

Exam name ↓	Body region	Study volume	Is pediatric	Median CTDIvol (mGy)	12 month CTDIvol from [4/24/2017]	Median DLP (mGy*cm)	12 month DLP from [4/24/2017]
CT WRIST UNILATERAL	Upper extremities	94	No	7.62		120.8	
CT VENOGRAPHY CHEST SUPERIOR VENA CAVA	Chest	3	No	26.72		1058.74	
CT UROGRAPHY	Abdomen	1023	No	15.47		1406.68	
CT UPPER EXTREMITY UNILATERAL	Upper extremities	6	No	20.77		489.15	
CT UPPER EXTREMITY	Upper extremities	41	No	8.8		194.1	
CT T-SPINE WO AND W CONTRAST	Chest	2	No	19.33		1099.16	
CT T-SPINE TRAUMA	Chest	80	No	23.27		1408.76	
CT T-SPINE	Chest	254	No	24.29		1128.88	
CT TIB/FIB UNILATERAL	Lower extremities	31	No	12.57		633.79	
CT TEMPORAL BONES WO AND W CONTRAST	Head	29	No	70.33		1095.52	
CT TEMPORAL BONES	Head	203	No	70.04		564.6	
CT STEREOTAXIS	Head	3	No	31.51		476.51	
CT SINUS	Head	1243	No	13.27		193.55	

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MACRA Metric N/A/360

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

Count of potential high dose imaging studies: CT/Cardiac CT

Metric:

Percentage of computed tomography and cardiac nuclear medicine (myocardial perfusion studies) imaging reports for all patients, regardless of age, that document a count of known previous CT (any type of CT) and cardiac nuclear medicine (myocardial perfusion) studies that the patient has received in the 12-month period prior to the current study

Guidance Notes:

Increased CT use has resulted in growing rates of repeat or multiple imaging. Physicians may lack important information that could inform their decisions in ordering imaging exams that use ionizing radiation. Ordering physicians may not have access to patients' medical imaging or radiation dose history. Due to insufficient information, physicians may unnecessarily order imaging procedures that have already been conducted.

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MACRA Metric N/A/360

In general CT/Cardiac CT exam data is readily available however cardiac nuclear medicine is not for SPECT imaging. A DICOM standard is now being finalized to make this possible.



< High utilization patients sorted by number of exams

Generate PDF Schedule ?

Patient's age - Include empty patient's age

patients to show [Display](#)

Patient name	Patient ID	Study date	Modality type	Last exam		Total effective dose (mSv)	Total # exams ↑	Last 12 months			
				Exam name	Reference exam			Total # CT exams	Total # RF/XA exams	Total # MG exams	Total # CR exams
D4FC13D0C01A	8B397FAE	11/15/2016	CT	ABDOMEN^HELICALQC (ADULT)	CT QUALITY CONTROL	152.7	69	69	0	0	0
				ABDOMEN HELICAL SCAN MODE							
50779D5D19D7	F415D11C	11/14/2016	CT	PRIVATE^DAILYQA (ADULT)	CT QUALITY CONTROL	38.2	66	66	0	0	0
D9F454E84CE4	7445431A	11/15/2016	CT	PRIVATE^DAILYQA (ADULT)	CT QUALITY CONTROL	95	39	39	0	0	0
86CFCBF77669	86C72CA4	11/8/2016	CT	ABDOMEN^HELICALQC (ADULT)	CT QUALITY CONTROL	51.9	32	32	0	0	0
				ABDOMEN HELICAL SCAN MODE							
3917A4095BC6	2E19BC63	11/12/2016	CT	ABDOMEN^HELICALQC (ADULT)	CT QUALITY CONTROL	37.2	23	23	0	0	0
				ABDOMEN HELICAL SCAN MODE							
02109684E300	4BEB9664	11/16/2016	CT	PRIVATE^DAILYQA (ADULT)	CT QUALITY CONTROL	22.4	21	21	0	0	0
88034CDE0306	CC2EAA9C	9/13/2016	CT	CT CERVICAL SPINE WO C	CT C-SPINE	59.2	20	18	2	0	0
62FA40900019	DAB6BE47	11/10/2016	XA	TUBES		273.5	20	16	4	0	0
70FC2DAD2637	7D5DFF93	9/26/2016	CT	HEAD^BRAIN (ADULT)	CT JC HEAD ADULT	71.4	20	20	0	0	0
207835455449	5BB05BDC	8/23/2016	XA	IR BILIARY CATHETER EXCHANGE		125.5	18	7	11	0	0



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MACRA Metric N/A/361

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

Reporting to a radiation dose index registry

Metric:

Percentage of total CT studies performed for all patients, regardless of age, that are reported to a radiation dose index registry AND that include at a minimum selected data elements.

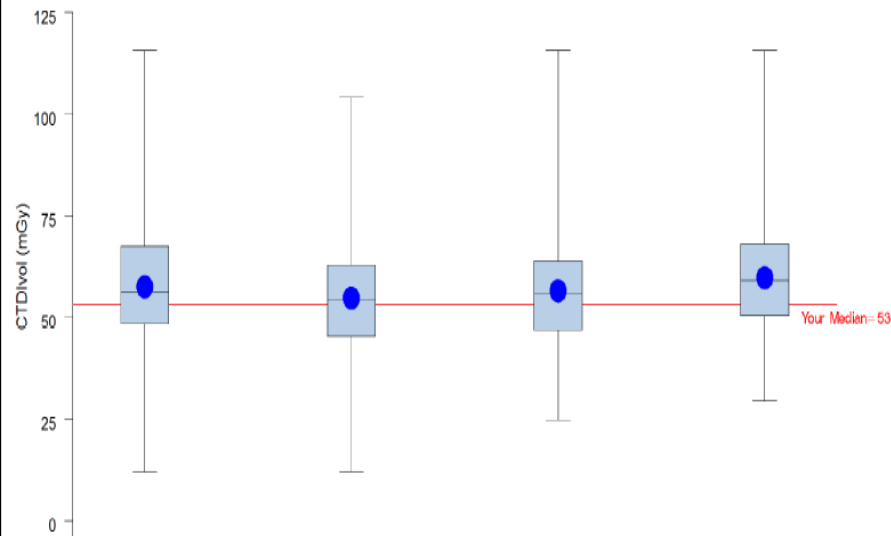
Guidance Notes:

CT studies performed that are reported to a radiation dose index registry that is capable of collecting at a minimum all of the following data elements:

- Manufacturer, study description, model name
- Patient weight, size, sex, age
- Exposure time, tube current, kV, CTDIvol and DLP

MACRA Metric N/A/361 ACR Dose Index Registry

Median CT HEAD BRN WO IVCON CTDIvol Per Scan

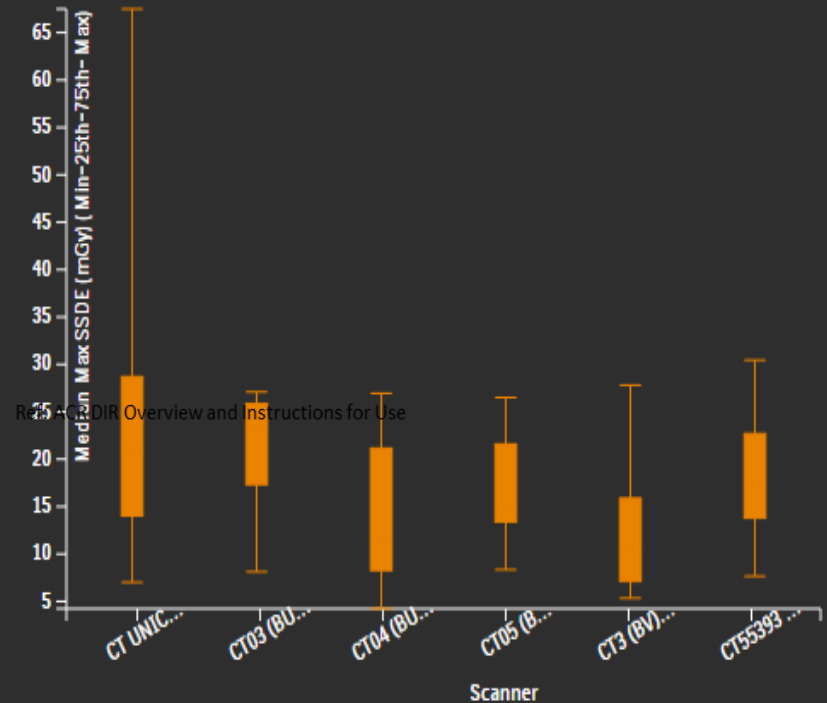


Summary Stats for Facility Median Value				
# of facilities	206	107	80	85
Median (mGy)	56	54	56	59
Mean (mGy)	58	55	57	60
Min (mGy)	12	12	25	29
Max (mGy)	116	104	116	116

CT ABD/PEL SSDE By Scanner

Exam name:

CT ABDOMEN AND PE



Read ACR DIR Overview and Instructions for Use



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MACRA Metric N/A/362

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

CT Images available for patient follow-up and comparison purposes

Metric:

Percentage of final reports for CT studies performed for all patients, regardless of age, which document that DICOM format image data are available to non-affiliated external healthcare facilities or entities on a secure, media free, reciprocally searchable basis with patient authorization for a t least a 12-month period after the study.

Guidance Notes:

Core functional requirements for an Internet-based system for sharing medical records:

- a) methods to ensure privacy and confidentiality of data;
- b) capability to move and store large data files (e.g., images) with the same efficiency and reliability as possible with small data files (e.g., text);
- c) construction of registries, which contain “knowledge” of all fragments of medical information (and their physical location) from all sources for a given patient;
- d) an ability to match records and accurately reconcile patient identities without a common patient identifier;
- e) a means to regulate access to data and audit the access;
- f) a method for moving blocks of data from one location to another; and
- g) a method to aggregate and consume the data at the point of care.

MACRA Metric N/A/363

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

Search for prior CT studies through a secure, authorized, media-free, shared archive

Metric:

Percentage of final reports of CT studies performed for all patients, regardless of age, which document that a search for DICOM format images was conducted for prior patient CT imaging studies completed at non-affiliated external healthcare facilities or entities within the past 12-months and are available through a secure, authorized, media free, shared archive prior to an imaging study being performed.

Guidance Notes:

Core functional requirements for an Internet-based system for sharing medical records:

- a) methods to ensure privacy and confidentiality of data;
- b) capability to move and store large data files (e.g., images) with the same efficiency and reliability as possible with small data files (e.g., text);
- c) construction of registries, which contain “knowledge” of all fragments of medical information (and their physical location) from all sources for a given patient;
- d) an ability to match records and accurately reconcile patient identities without a common patient identifier;
- e) a means to regulate access to data and audit the access;
- f) a method for moving blocks of data from one location to another; and
- g) a method to aggregate and consume the data at the point of care.

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MACRA Metric N/A/364

Subgroup:

Optimizing patient exposure to ionizing radiation

Subject:

Appropriateness: Follow-up CT imaging for incidentally detected pulmonary nodules according to recommended guidelines

Metric:

Percentage of final reports for CT imaging studies of the thorax for patients aged 18 years and older with documented follow-up recommendations for incidentally detected pulmonary nodules (e.g., follow-up CT imaging studies needed or that no follow-up is needed) based at a minimum on nodule size AND patient risk factors.

Guidance Notes:

Since the decision to perform follow-up studies relies on size, lesion characteristics (e.g., morphology), and growth rates (typically described as doubling time), an understanding of these features and their relationship to malignancy should dictate further evaluation. In addition, the patient's risk profile, including age and smoking history, needs to be integrated into the diagnostic algorithm.

Lung Pulmonary Nodule Exams

April 23-26, 2017

Study number	Series description	Protocol	Body part	Effective dose	Exposure time	kVp	Average mA	DLP	CTDIvol	SSDE	Phantom type	Acquisition type
113	Radiation Dose Info	LUNG SCREENING /Thorax	Chest	0.8	435000	100	69	56	1.2	1.52	IEC Body Dosimetry Phantom	Spiral Acquisition
113	Radiation Dose Info	LUNG SCREENING /Thorax	Entire body	0.1	1034000	80	29	0.5	0.02		IEC Body Dosimetry Phantom	Constant Angle Acquisition
113	Radiation Dose Info	LUNG SCREENING /Thorax	Entire body	0.1	1034000	80	29	0.5	0.02		IEC Body Dosimetry Phantom	Constant Angle Acquisition
17118	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17118	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17118	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.5	3320	100	55	35.53	0.97	1.23	IEC Body Dosimetry Phantom	Spiral Acquisition
17118	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.5	3320	100	55	35.53	0.97	1.23	IEC Body Dosimetry Phantom	Spiral Acquisition
17159	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17159	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17159	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.4	3050	100	50	29.49	0.88	1.12	IEC Body Dosimetry Phantom	Spiral Acquisition
17159	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.4	3050	100	50	29.49	0.88	1.12	IEC Body Dosimetry Phantom	Spiral Acquisition
17168	Dose Record	5.30 LUNG SCREENING CHEST 20 or less****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17168	Dose Record	5.30 LUNG SCREENING CHEST 20 or less****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17168	Dose Record	5.30 LUNG SCREENING CHEST 20 or less****	Chest	0.5	3560	100	45	31.26	0.8	1.02	IEC Body Dosimetry Phantom	Spiral Acquisition
17168	Dose Record	5.30 LUNG SCREENING CHEST 20 or less****	Chest	0.5	3560	100	45	31.26	0.8	1.02	IEC Body Dosimetry Phantom	Spiral Acquisition
17207	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17207	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17207	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.5	3610	100	50	35.12	0.88	1.12	IEC Body Dosimetry Phantom	Spiral Acquisition
17207	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.5	3610	100	50	35.12	0.88	1.12	IEC Body Dosimetry Phantom	Spiral Acquisition
17212	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17212	Dose Record	5.28 LUNG SCREENING CHEST****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17212	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.6	3780	100	50	36.95	0.89	1.13	IEC Body Dosimetry Phantom	Spiral Acquisition
17212	Dose Record	5.28 LUNG SCREENING CHEST****	Chest	0.6	3780	100	50	36.95	0.89	1.13	IEC Body Dosimetry Phantom	Spiral Acquisition
17219	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17219	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17219	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.6	3640	100	55	39.1	0.98	1.24	IEC Body Dosimetry Phantom	Spiral Acquisition
17219	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.6	3640	100	55	39.1	0.98	1.24	IEC Body Dosimetry Phantom	Spiral Acquisition
17247	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17247	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest		4100	80	10				IEC Body Dosimetry Phantom	Constant Angle Acquisition
17247	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.5	3400	100	55	36.42	0.97	1.23	IEC Body Dosimetry Phantom	Spiral Acquisition
17247	Dose Record	5.29 LUNG SCREENING CHEST BMI 35 or greater****	Chest	0.5	3400	100	55	36.42	0.97	1.23	IEC Body Dosimetry Phantom	Spiral Acquisition



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MACRA Metric N/A/415

Subgroup:

Emergency Medicine

Subject:

Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 18 Years and Older

Metric:

Percentage of emergency department visits for patients aged 18 years and older who presented within 24 hours of a minor blunt head trauma with a Glasgow Coma Scale (GCS) score of 15 and who had a head CT for trauma ordered by an emergency care provider who have an indication for a head CT.

Guidance Notes:

The Glasgow Coma Scale is a grading system for neurological scale. It is an objective score based on the response to three factors (eye, verbal and motor skills). It is worth noting that GCS of 15 is a “perfect score” of alertness while a score of 3 would be near death/deep coma.

MACRA Metric N/A/416

Subgroup:

Emergency Medicine

Subject:

Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 2 through 17 years

Metric:

Percentage of emergency department visits for patients aged 2 through 17 years who presented within 24 hours or a minor blunt head trauma with a Glasgow Coma Scale score of 15 and who had a head CT for trauma ordered by an emergency care provider which are classified as low risk according to the Pediatric Emergency Care Applied Research Network prediction rules for traumatic brain injury.

Guidance Notes:

The Glasgow Coma Scale is a grading system for neurological scale. It is an objective score based on the response to three factors (eye, verbal and motor skills). It is worth noting that GCS of 15 is a “perfect score” of alertness while a score of 3 would be near death/deep coma. The GCS is questionable in children as they have limited verbal response.

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Glasgow Coma Scale Metric

- Looking for inappropriate overutilization of CT in pediatrics and adult patients who have low clinical risk of serious intracranial injury
- Rule is saying if you score a perfect “15” you should not have a CT exam
- Emergency rooms may need to change policies
- Keys is to correlate EHR information:
 - Glasgow coma scale
 - Patient age
 - Descriptors of minor trauma
- Start with head CTs and correlate backwards using EHR data

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MACRA Metric N/A/436

Subgroup:

Radiation Consideration for Adult CT

Subject:

Utilization of dose lowering techniques

Metric:

Percentage of final reports for patients aged 18 years and older undergoing CT with documentation that one or more of the following dose reduction techniques were used: AEC, adjustable mA/kV according to patient size, and use of iterative reconstruction techniques

Guidance Notes:

CT dose reduction features such as these are all standard issue as of 2015 forward production (and retrofitted in many cases) based on the MITA XR29 standard. Most CT systems can show via the log files that these features were used to justify compliance.



MACRA Metric N/A/436

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Most manufacturers have CT dose modulation in private DICOM tags

Brain

CTDi 60-70

- If needed start peripheral line
- Routine Brain: Scan to include the Base of the Skull through the Vertex of the Head. Position head 25° caudal to Reid's baseline, and ISO centered in scanner
- If contrast is ordered: inject 80ML OMNIPAQUE300, if eGFR 45-59 SUBSTITUTE 80 ML VISIPAQUE 320 X 1Dose @1-2 ml/sec using a 3 minute post injection delay.
- If the patient is a Brain Attack, do an AP scout through the Chest to check for a Pacemaker
- Reformat a set of Coronal images 2mm x 2mm off of thinnest STD(VCT) or J37 Medium Smooth(Siemens) set of images

VCT:

Scan – Helical
mA – 155
kV – 120
Detector Config: 20mm
Algorithm: STD
Rotation Time: 1.0

ASiR – ON
Dose Reduction – ON
Slice: 2.5x2.5
Speed: 10.62
Pitch: 0.531:1
Window: Head



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MACRA Metric N/A/145

Subgroup:

Radiology

Subject:

Exposure Time Reported for Procedures Using Fluoroscopy

Metric:

Final reports for procedures using fluoroscopy that document radiation exposure indices, or exposure time and number of fluorographic images (if radiation exposure indices are not available).

Guidance Notes:

If you have a dose tracking software system this can help aid in justifying compliance. In most cases modern fluoroscopy systems will export all cine runs and images as series level data that can be measured using a PACS analytics package.



MACRA Metric N/A/145

Dose tracking software makes it easy to pull data together as needed to export or save as a template.

Modality types: **CT** Fluoroscopy Conventional X-Ray Mammography Period from 3/24/2015 to 4/24/2017

Labs: RF1, XA1, XA2, XA3, XA4, XA5 Exams: IR CONSULT/REQUEST FOR PROCEDURE, A... Original exam names

Displayed columns: # of acq runs, # of acquired exposure ima... [Display](#) [Reset columns](#) [Export](#) [User](#)

Exam name	Patient ID	Total number of exposures	Total effective dose	Total acquisition time	Total fluoro time	Total exposure time
Xenon Renografie	58BFFAF7	20	6.8	16.33	391	
Image channel	Reference point definition	Cum DAP (fluoro)	Cum DAP (acquisition)	Cum DAP (rotational)	Total cum DAP	Total AK Total fluoro AK
Frontal	15cm below BeamIsocenter	11.52	14.71		26.23	88.17 40.81
Xenon Renografie	A29EB137	117	4.1	40.63	663	
Xenon Renografie	BC4F3287	35	8.2	27.33	387	
XA Exam	69C29B73					
XA Exam	9C26C412					

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Exam details: Study number: 100847921 (E85FA8AC4F61 : 58BFFAF7)

Acquisition start time, Calibrated DAP, Cal...

Run number	Image channel	Event type	Acquisition start time	Pulse rate	kVp	DAP	Dose RP	Filter type	Filter
1	Frontal	Fluoroscopy	10:38 am	15	77.79	0.05	0.12	Strip filter - Strip filter	0.4
2	Frontal	Fluoroscopy	10:38 am	15	77.86	0.04	0.11	Strip filter - Strip filter	0.4
3	Frontal	Fluoroscopy	10:42 am	15	84.68	0.12	0.41	Strip filter - Strip filter	0.4
4	Frontal	Fluoroscopy	10:43 am	15	83.93	3.51	12.57	Strip filter - Strip filter	0.4
5	Frontal	Fluoroscopy	10:45 am	15	84.53	1.63	5.84	Strip filter - Strip filter	0.4



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