

A Universally Applied CT Protocol Set

Is it even possible?

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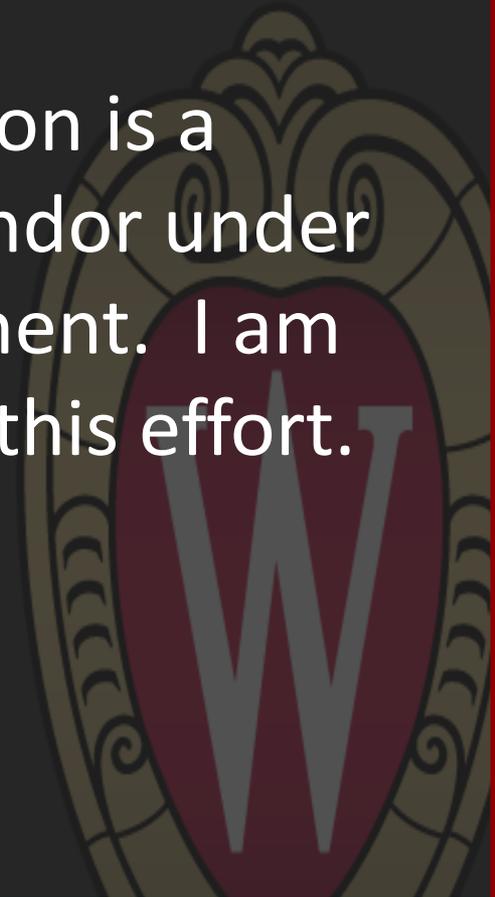


DEPARTMENT OF
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Disclosure

- Consultant GE Healthcare
- The University of Wisconsin-Madison is a supplier of CT protocols to a CT vendor under a licensing and distribution agreement. I am the lead university investigator on this effort.



H.R. 4302 – Protecting Access to Medicare Act of 2014

- Section 218: **Quality incentives** for Computed Tomography diagnostic imaging and promoting evidence-based care
- **Reduced technical fee** for specific diagnostic CT imaging exams completed on systems that are not compliant with NEMA XR 29-2013
 - **5%** reduction starting January 2016
 - **15%** reduction starting January 2017 and onward
- Applies to:
 - Specific diagnostic CT imaging exams completed on CTs, PET/CTs, and SPECT/CTs
 - Outpatient imaging exams provided by hospitals and offices/independent diagnostic testing facilities
- Does not apply to:
 - Interventional CT procedures
 - Inpatient imaging exams



NEMA XR 29-2013 / MITA Smart Dose standard requires that a CT system include four key features:

DICOM Radiation Dose Structured Reporting

- Enables recording of post-exam dose information in a standardized electronic format.

CT Dose Check

- Incorporates two features—dose notifications and dose alerts—that warn operators and physicians when dose will exceed established thresholds.

Automatic exposure controls (AEC)

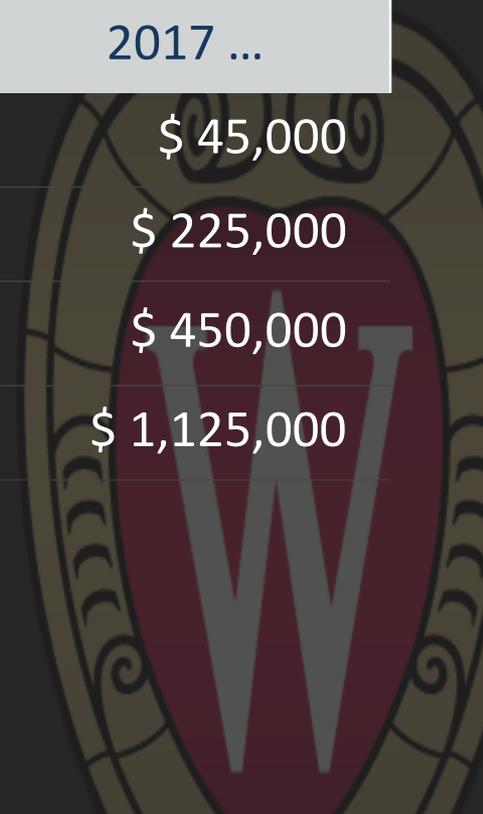
- Automatically adjust the amount of radiation within prescribed bounds as needed to achieve the desired image quality. Studies of AEC procedures have demonstrated dose reductions when used properly.

Pediatric and adult reference protocols

- A set of pre-loaded parameters on a CT system that can be selected by the operator to complete a particular clinical task, such as capturing an image of the abdomen.

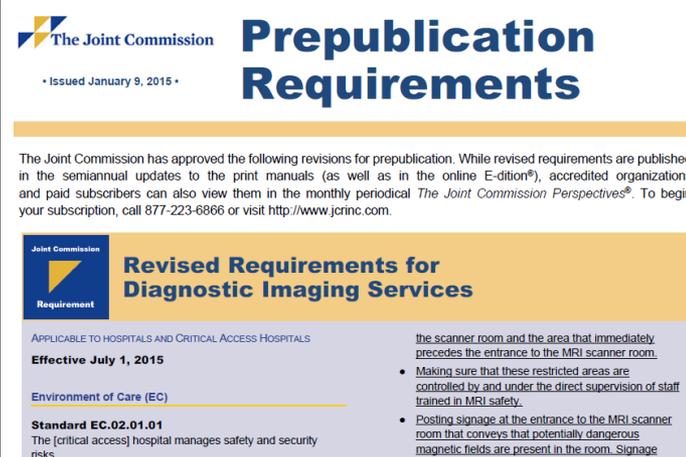
Potential financial impact

# Medicare exams per year	Average reimbursement	Potential annual impact	
		2016	2017 ...
1,000	\$300	\$ 15,000	\$ 45,000
5,000	\$300	\$ 75,000	\$ 225,000
10,000	\$300	\$ 150,000	\$ 450,000
25,000	\$300	\$ 375,000	\$ 1,125,000



Joint Commission new standards

- Hospitals and critical access hospitals
- July 1, 2015
- MR, CT, PET/CT, NM
- Changes to:
 - Environment of care (EC)
 - Human resources (HR)
 - Medication management (MM)
 - Provision of care, treatment, & services (PC)
 - Performance improvement (PI)



The Joint Commission **Prepublication Requirements**
• Issued January 9, 2015 •

The Joint Commission has approved the following revisions for prepublication. While revised requirements are published in the semiannual updates to the print manuals (as well as in the online E-dition®), accredited organizations and paid subscribers can also view them in the monthly periodical *The Joint Commission Perspectives*®. To begin your subscription, call 877-223-6866 or visit <http://www.jcrinc.com>.

Revised Requirements for Diagnostic Imaging Services

APPLICABLE TO HOSPITALS AND CRITICAL ACCESS HOSPITALS
Effective July 1, 2015

Requirement
Environment of Care (EC)

Standard EC.02.01.01
The [critical access] hospital manages safety and security risks.

the scanner room and the area that immediately precedes the entrance to the MRI scanner room.

- Making sure that these restricted areas are controlled by and under the direct supervision of staff trained in MRI safety.
- Posting signage at the entrance to the MRI scanner room that conveys that potentially dangerous magnetic fields are present in the room. Signage should also indicate that the magnet is always on.

CT JCAHO Standards

Environment of care

- Quarterly occupational dose review by RSO
- Activities to maintain quality of diagnostic images
- Annual measurement and verification of displayed CTDIvol
- Annual equipment quality check
- Annual testing of image acquisition display monitors
- Shielding design assessment pre-installation
- Shielding survey post-installation

Human resources

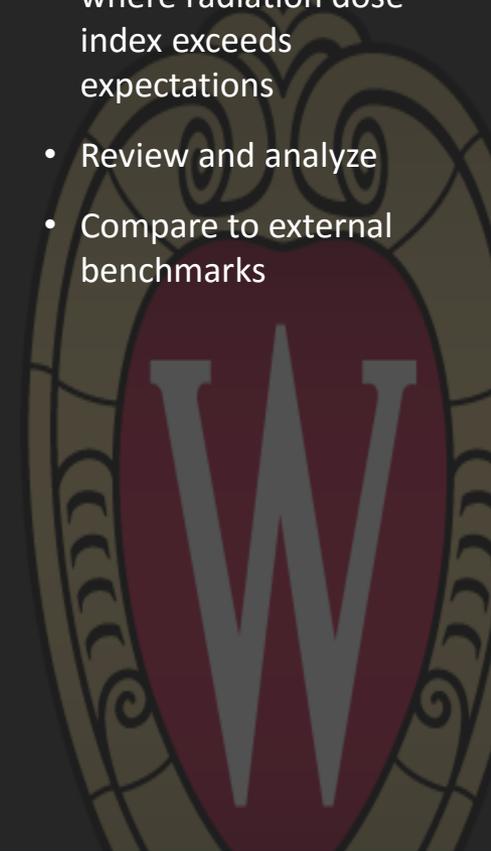
- Qualifications for physicists
- Annual training for technologists

Provision of care

- Documentation of radiation dose index for every study in a retrievable format
- Pre-scan verification of patient info and protocol
- Consider patient's age when deciding on exam type
- Adoption of protocols based on current standards of care
- Periodic review of protocols

Performance improvement

- Identify incidents where radiation dose index exceeds expectations
- Review and analyze
- Compare to external benchmarks



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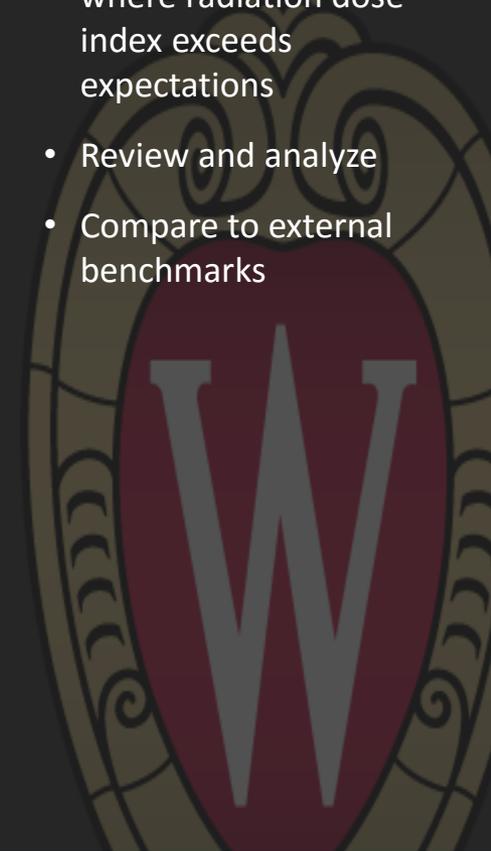
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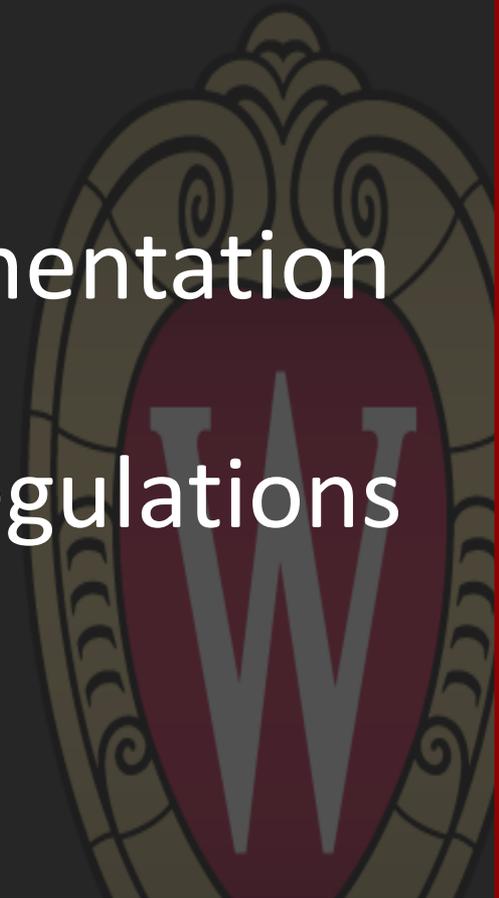
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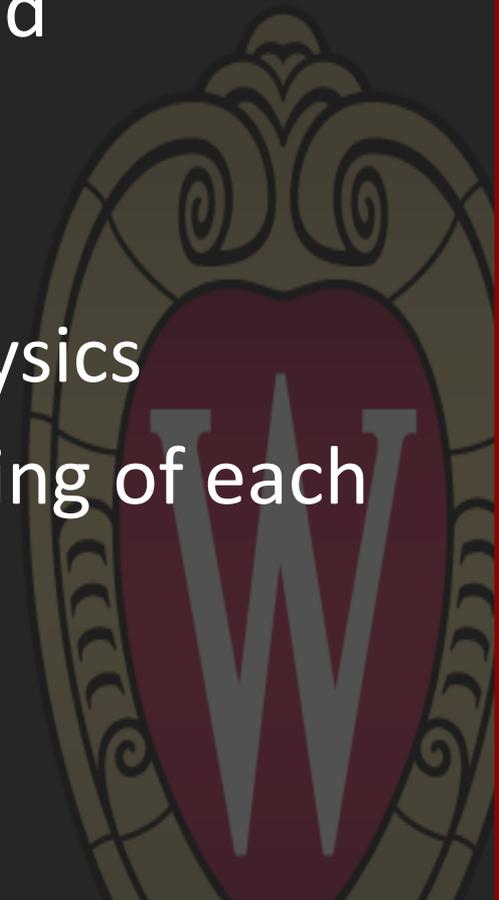
Burden of protocol development placed on the shoulders of the physician, physicist and technologist community.

- Ever more daunting a task
- Higher complexity of instrumentation
- More rigorous monitoring regulations



Why is protocol management so challenging?

- because it requires a champion and consensus
- it requires a lot of time and \$\$\$
- it requires a strong grasp of CT physics
- it requires a thorough understanding of each of your scanner's capabilities



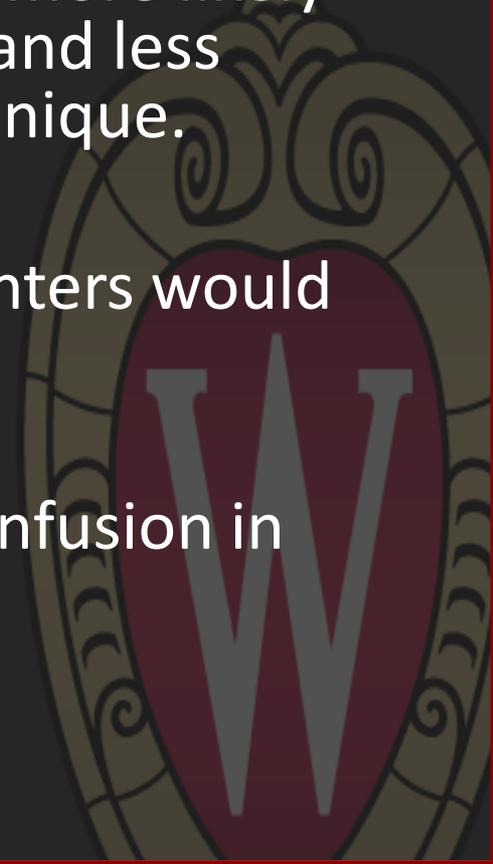
AAPM Practice guideline 1.a

- What constitutes a CT protocol
 - CT Protocol – the collection of settings and parameters that fully describe a CT examination. Protocol may be relatively simple for some body part specific systems or highly complex for full-featured, general-purpose CT systems.
 - The guideline references the AAPM CT lexicon and the AAPM CT protocol set

Our philosophy is that anything that happens to a patient before/during/after their scan can affect diagnostic utility and should be standardized. This is reflected in our booklet and CT protocol WIKI.

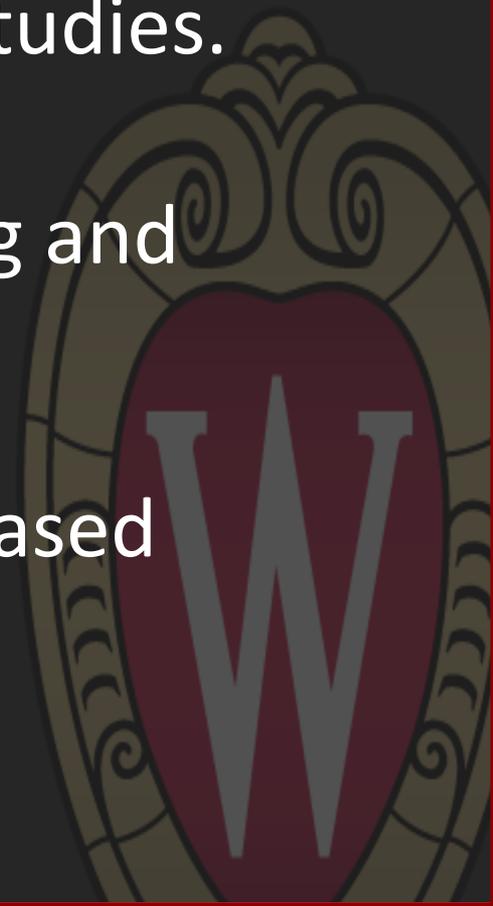
Benefits of protocol standardization

- Follow-up comparison studies would be more likely to show true variation in tumor growth and less likely to be affected by variations in technique.
- Comparisons scans between imaging centers would not be an issue at the time of referral.
- Adherence would result in decreased confusion in billing and coding.



Benefits of protocol standardization

- Decreased frequency of repeat studies.
- Centralization of dose monitoring and benchmarking.
- Adherence would result in decreased confusion in billing and coding.



Benefits of protocol standardization

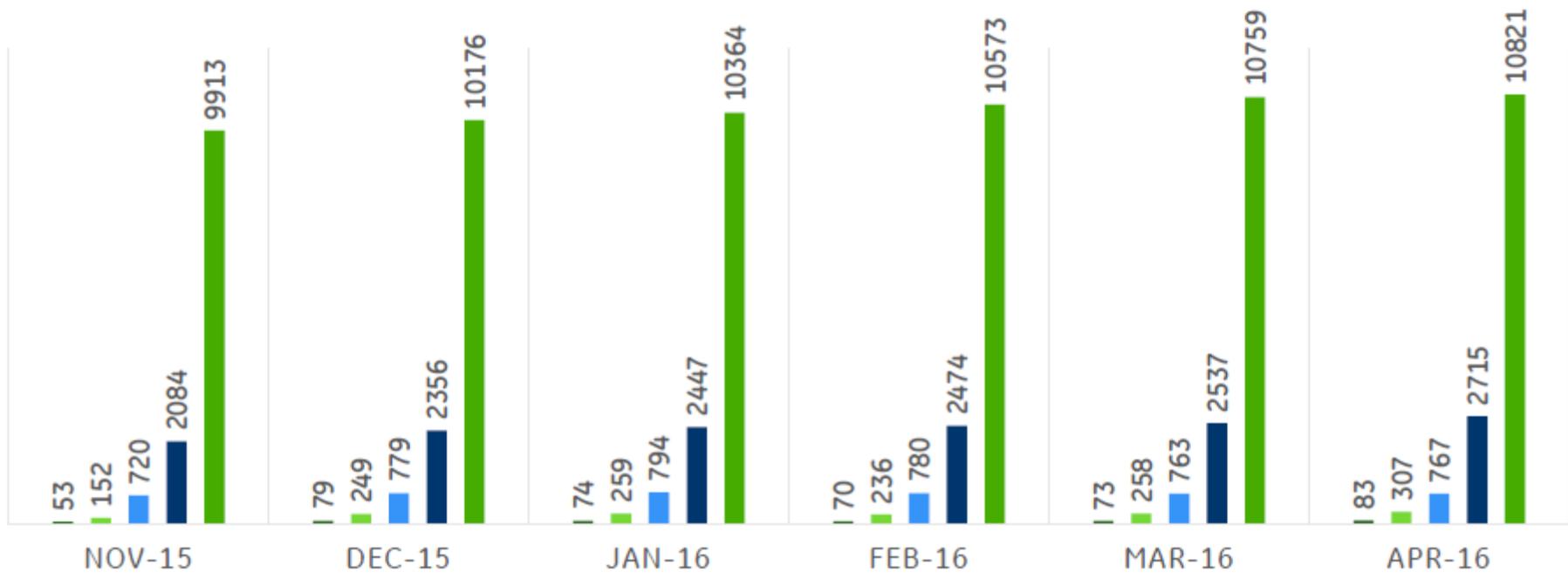
- Standardization of study names and series names.
- Simplification of hanging protocols



The large consortiums are looking for standardization across their hospital networks.

NUMBER OF UNIQUE PROTOCOL NAMES

Organization 1 Organization 2 Organization 3 Organization 4 All CTs



Inherent resistance to protocol modification efforts

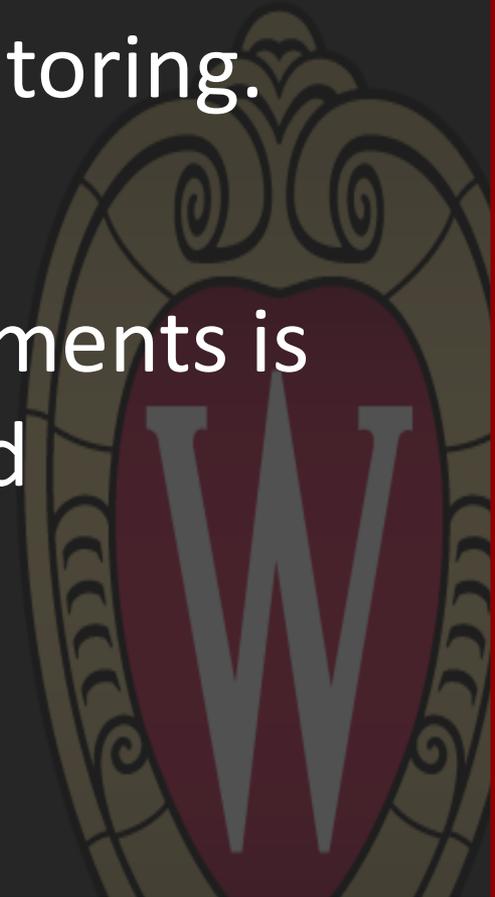
- “These are my protocols, don't touch them.”
- When confronted with the suggestion of dose reduction, frequent concern is: “I don't want to be sued for missing a lesion because image quality is degraded.”



The Task at Hand

The new Joint Commission regulations are mandating a whole new threshold for protocol development and monitoring.

The complexity of these requirements is likely to overwhelm the standard radiology practice.



Conclusions

- Could there ever be a universal CT protocol set?
- Our society cannot afford to not have a universal protocol set

