

Measure: Overuse of Imaging for Headache and Seizure, Policy for ALARA Specific to Imaging Children

Measure Developer: Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC), University of Michigan

As a Center of Excellence for the Agency for Healthcare Research and Quality-Centers for Medicare & Medicaid Services Pediatric Quality Measures Program (PQMP), Q-METRIC developed a measure to assess the performance of imaging studies with radiation doses "as low as reasonably achievable" (ALARA) for children under the age of 18 years.

The measure assesses the percentage of facilities with a policy for ALARA dosing of radiation specific to the imaging of children. A higher percentage of facilities with an ALARA policy specific to children indicates better performance, as reflected by use of minimal radiation when imaging.

Measure Importance

- Ionizing radiation is used with greater frequency to diagnose and characterize a variety of diseases. However, the technology involves an increased risk for secondary cancer following exposure to radiation. Children are particularly vulnerable to ionizing radiation because their developing cellular structures and tissues are significantly more radiosensitive than those of adults.[1] Within this context, it is important to be consistent and judicious with radiation dose and to weigh the benefits of information obtained from imaging in light of the increased risk of latent malignancy.
- ALARA policies, which support radiation doses "as low as reasonably achievable," are an established pediatric imaging best practice.[2] Having ALARA policies with age and/or size-specific radiation doses programmed into CT scanners is the essential first step for following the even higher level of care specified by the Image Gently Campaign, in which facilities are accredited by the American College of Radiology (ACR) in pediatric computed tomography (CT) imaging and committed to imaging pediatric patients with appropriate radiation doses.

- Although imaging guidelines are widely promulgated, many hospitals and imaging facilities still do not apply ALARA-based dose reduction techniques for all varieties of pediatric imaging.

Measure Development

- Validity
  - To develop the measure, Q-METRIC convened a panel of nationally recognized experts on pediatric imaging, representing general pediatrics, pediatric radiology, pediatric neurology, pediatric neurosurgery, pediatric emergency medicine, general emergency medicine, and family medicine.
    - In addition, the face validity of this measure was considered by experts in State Medicaid program operations, health plan quality measurement, health informatics, and health care quality measurement.
    - In total, the Q-METRIC imaging panel included 15 experts, providing a comprehensive perspective on imaging of children and the measurement of quality metrics for States and health plans.
    - Concepts and draft measures were rated by this group for their relative importance. This measure was very highly rated, receiving an average score of 9.0, which was the highest possible score.
    - The Q-METRIC expert panel concluded that this measure has a high degree of face validity through a detailed review of concepts and metrics considered to be essential for the appropriate imaging of children.
- Measure Testing
  - This measure was tested at the statewide level using an in-person telephone survey of staff members at facilities in Michigan indicating that they provide CT services to children.
  - Indication of pediatric CT service capabilities was confirmed with State certificate of need reports.[3]
  - ALARA protocol responses were validated through accreditation information published by the ACR.[4]

Selected Findings

Table. Rate of ACR-Accredited Facilities (with ALARA Policies) and Facilities Supporting Image Gently

	Numerator	Denominator	Rate
Surveyed Facilities Reporting Adherence to ALARA Protocols Specific to Imaging Children	58	58	100%
ACR-Accredited Facilities	96	194	49%
Facilities Committed to Image Gently Campaign	76	194	39%

Considerations

- This measure is intended to be used for assessing ALARA policies among CT imaging sites in a specific geographic jurisdiction.

Measure Acceptance and Use

- Accepted for inclusion in the National Quality Measures Clearinghouse. http://www.qualitymeasures.ahrq.gov/.

More Information

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References

[1]Pearce MS, Salotti JA, Little MP, et al., Radiation exposure from CT scans in childhood and subsequent risk of leukemia and brain tumors: A retrospective cohort study. Lancet 2012; 380(9840): 499–505.

[2]American College of Radiology (ACR) Statement on recent studies regarding CT scans and increased cancer risk, December 15, 2009. ACR Website. http://www.acr.org/About-Us/Media-Center/Position-Statements/Position-Statements-Folder/ACR-Statement-on-Recent-Studies-Regarding-CT-Scans-and-Increased-Cancer-Risk. Accessed December 18, 2014.

[3]Michigan Certificate of Need Annual Survey Report – Computed Tomography (CT) Services Provided by Hospitals, Freestanding Facilities, and Host Sites (2012) Report 101. State of Michigan Website. http://www.michigan.gov/documents/mdch/Report_101_433946_7.pdf. Accessed December 18, 2014.

[4]American College of Radiology (ACR) Computed Tomography Accreditation. ACR Website. http://www.acr.org/Quality-Safety/Accreditation/CT. Accessed December 18, 2014.

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