OPTIMIZING PATIENT EXPOSURE TO IONIZING RADIATION (OPEIR) MEASURES GROUP OVERVIEW

2014 PQRS OPTIONS FOR MEASURES GROUPS:

2014 PQRS MEASURES IN OPTIMIZING PATIENT EXPOSURE TO IONIZING RADIATION (OPEIR) MEASURES GROUP:

#359. Optimizing Patient Exposure to Ionizing Radiation: Utilization of a Standardized Nomenclature for Computed Tomography (CT) Imaging Description

#360. Optimizing Patient Exposure to Ionizing Radiation: Count of Potential High Dose Radiation Imaging Studies: Computed Tomography (CT) and Cardiac Nuclear Medicine Studies

#361. Optimizing Patient Exposure to Ionizing Radiation: Reporting to a Radiation Dose Index Registry

#362. Optimizing Patient Exposure to Ionizing Radiation: Computed Tomography (CT) Images Available for Patient Follow-up and Comparison Purposes

#363. Optimizing Patient Exposure to Ionizing Radiation: Search for Prior Computed Tomography (CT) Studies Through a Secure, Authorized, Media-Free, Shared Archive

#364. Optimizing Patient Exposure to Ionizing Radiation: Appropriateness: Follow-up CT Imaging for Incidentally Detected Pulmonary Nodules According to Recommended Guidelines

INSTRUCTIONS FOR REPORTING:

• It is not necessary to submit the measures group-specific intent G-code for registry-based submissions. However, the measures group-specific intent G-code has been created for registry only measures groups for use by registries that utilize claims data.

G9238: I intend to report the Optimizing Patient Exposure to Ionizing Radiation (OPEIR) Measures Group

• Report the patient sample method:

20 Patient Sample Method via registries: 20 unique patients (a majority of which must be Medicare Part B FFS patients) meeting patient sample criteria for the measures group during the reporting period (January 1 through December 31, 2014 OR July 1 through December 31, 2014).

• Patient sample criteria for the OPEIR Measures Group are all patients regardless of age, that have a specific CT procedure performed:

One of the following patient encounter codes: 70450, 70460, 70470, 70480, 70481, 70482, 70486, 70487, 70488, 70490, 70491, 70492, 70496, 70498, 71250, 71260, 71270, 71275, 71285, 71286, 7129, 71290, 71291, 71292, 71293, 71294, 72292, 73200, 73201, 73202, 73206, 73700, 73701, 73702, 73706, 74160, 74170, 74174, 74175, 74176, 74177, 74178, 74261, 74262, 75571, 75572, 75573, 75574, 75635, 76380, 76497, 77011, 77013, 77078, 78072

• Report a numerator option on all applicable measures within the OPEIR Measures Group for each eligible patient within the eligible professional’s patient sample.

• Measure #364 only needs to be reported when the patient has a procedure performed specific to the following CPT procedure codes: 71250, 71260, 71270, 71275 with a finding of an incidental pulmonary nodule.

• Instructions for qualifying numerator option reporting for each of the measures within the Optimizing Patient Exposure To Ionizing Radiation (OPEIR) Measures Group are displayed on the next several pages. The following composite Quality Data Code (QDC) has been created for registries that utilize claims data. This QDC may be reported in lieu of individual QDCs when all quality clinical actions for all applicable measures within the group have been performed.
**Composite QDC G9236:** All quality actions for the applicable measures in the Optimizing Patient Exposure to Ionizing Radiation (OPEIR) Measures Group have been performed for this patient

- To report satisfactorily the OPEIR Group it requires **all** measures for each patient within the eligible professional's patient sample to be reported each time a procedure is performed during the reporting period.

- Measures groups containing a measure with a 0% performance rate will not be counted as satisfactorily reporting the measures group. The recommended clinical quality action must be performed on at least one patient for each measure within the measures group reported by the eligible professional. If a measure within a measures group is not applicable to a patient, the patient would not be counted in the performance denominator for that measure (e.g., Preventive Care Measures Group - Measure #39: Screening or Therapy for Osteoporosis for Women Aged 65 Years and Older would not be applicable to male patients according to the patient sample criteria). If the measure is not applicable for all patients within the sample, the performance rate would be 0/0 and would be considered satisfactorily reporting. Performance exclusion quality-data codes are not counted in the performance denominator. If the eligible professional submits all performance exclusion quality-data codes, the performance rate would be 0/0 and would be considered satisfactorily reporting. When a lower rate indicates better performance, such as Measure #123, a 0% performance rate will be counted as satisfactorily reporting (100% performance rate would not be considered satisfactorily reporting).

- **NOTE:** The detailed instructions in this specification apply exclusively to the reporting and analysis of the included measures under the measures groups' option.
Measure #359: Optimizing Patient Exposure to Ionizing Radiation: Utilization of a Standardized Nomenclature for Computed Tomography (CT) Imaging Description

DESCRIPTION:
Percentage of computed tomography (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.

NUMERATOR:
CT imaging reports with the imaging study named according to a standardized nomenclature and the standardized nomenclature is used in institution’s computer systems.

Numerator Instructions: Standardized nomenclature is used in institution’s computer systems, including but not limited:
- computerized physician ordering system
- charge master
- radiology information system
- electronic health record

NUMERATOR NOTE: Use of a standardized nomenclature is meant to enable reporting to a Dose Index Registry. There is no standard lexicon implemented across the board for naming CT exam procedures. To make like comparisons of sites reporting dose index data to a registry, it is necessary to use a specific CT exam name and standardize that across registry participants.

Numerator Options:
- Imaging study named according to standardized nomenclature (G9318)
- Documentation of medical reason(s) for not naming CT studies according to a standardized nomenclature provided (e.g., CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9320)
- Imaging study not named according to standardized nomenclature, reason not given (G9319)
Measure #360: Optimizing Patient Exposure to Ionizing Radiation: Count of Potential High Dose Radiation Imaging Studies: Computed Tomography (CT) and Cardiac Nuclear Medicine Studies

DESCRIPTION:
Percentage of computed tomography (CT) 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.

NUMERATOR:
CT and cardiac nuclear medicine (myocardial perfusion studies) imaging reports 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.

Numerator Instructions: Physicians will need to document in the final report all known previous CT and cardiac nuclear medicine (myocardial perfusion) studies the patient has received in the 12-month period prior to the current study as a count that includes studies from the Radiology Information System, patient-provided radiological history or other source.

Numerator Options:
Count of previous CT (any type of CT) and cardiac nuclear medicine (myocardial perfusion) studies documented in the 12-month period prior to the current study (G9321)

OR
Documentation of medical reason(s) for not counting previous CT and cardiac nuclear medicine (myocardial perfusion) studies (e.g., CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9323)

OR
Count of previous CT and cardiac nuclear medicine (myocardial perfusion) studies **not** documented in the 12-month period prior to the current study, reason not given (G9322)
Measure #361: Optimizing Patient Exposure to Ionizing Radiation: Reporting to a Radiation Dose Index Registry

DESCRIPTION:
Percentage of total computed tomography (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

NUMERATOR:
CT studies performed that are reported to a radiation dose index registry AND that include at a minimum all of the following data elements:
- Manufacturer
- Study description
- Manufacturer's model name
- Patient's weight
- Patient's size/length (height)
- Patient's sex
- Patient's age
- Exposure time
- X-Ray tube current
- Kilovoltage peak (kVp)
- Mean Volume Computed tomography dose index (CTDImvol)
- Dose-length product (DLP)

Detailed information regarding the patient demographic and scanner data elements included in the Digital Imaging and Communication in Medicine (DICOM) header and CT irradiation event data elements included in the DICOM Supplement 127: CT Radiation Dose Reporting (Dose Structured Report) can be found in the Dose Index Registry Data Dictionary available on the American College of Radiology (ACR) Web site at this link: http://www.acr.org/~/media/ACR/Documents/PDF/QualitySafety/NRDR/DIR/DataElementsInDIRHeaderSR.pdf

Numerator Options:
- CT studies performed reported to a radiation dose index registry with all necessary data elements (G9327)
- OR
- CT studies not reported to a radiation dose index registry due to medical reasons (e.g., CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9325)
- OR
- CT studies performed not reported to a radiation dose index registry, reason not given (G9326)
- OR
- All necessary data elements not included, reason not given (G9324)
Measure #362: Optimizing Patient Exposure to Ionizing Radiation: Computed Tomography (CT) Images Available for Patient Follow-up and Comparison Purposes

DESCRIPTION:
Percentage of final reports for computed tomography (CT) studies performed for all patients, regardless of age, which document that Digital Imaging and Communications in Medicine (DICOM) format image data are available to non-affiliated external entities on a secure, media-free, reciprocally searchable basis with patient authorization for at least a 12-month period after the study.

NUMERATOR:
Final reports for CT studies which document that DICOM format image data are available to non-affiliated external entities on a secure, media-free, reciprocally searchable basis with patient authorization for at least a 12-month period after the study.

Numerator Instructions: This measure is intended for reporting by facilities that have archival abilities through a shared archival system.

Definitions:
Media-free - Radiology images that are transmitted electronically ONLY, not images recorded on film, CD, or other imaging transmittal form.

Numerator Options:
Final report documented that DICOM format image data available to non-affiliated external entities on a secure, media-free, reciprocally searchable basis with patient authorization for at least a 12-month period after the study (G9340)

OR
DICOM format image data availability not documented in final report due to medical reasons (e.g., CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9328)

OR
DICOM format image data available to non-affiliated external entities on a secure, media-free, reciprocally searchable basis with patient authorization for at least a 12-month period after the study NOT documented in final report, reason not given (G9329)
Measure #363: Optimizing Patient Exposure to Ionizing Radiation: Search for Prior Computed Tomography (CT) Imaging Studies Through a Secure, Authorized, Media-Free, Shared Archive

**DESCRIPTION:**
Percentage of final reports of computed tomography (CT) studies performed for all patients, regardless of age, which document that a search for Digital Imaging and Communications in Medicine (DICOM) format images was conducted for prior patient CT imaging studies completed at non-affiliated external entities within the past 12-months and are available through a secure, authorized, media-free, shared archive prior to an imaging study being performed.

**NUMERATOR:**
Final reports of CT studies, which document that a search for DICOM format images was conducted for prior patient CT imaging studies completed at non-affiliated external entities within the past 12-months and are available through a secure, authorized, media-free, shared archive prior to an imaging study being performed.

**Numerator Instructions:** This measure is intended for reporting by facilities that have archival abilities through a shared archival system.

**Definitions:**
- Media-free - Radiology images that are transmitted electronically ONLY, not images recorded on film, CD, or other imaging transmittal form.

**Numerator Options:**
- Search conducted for prior patient CT imaging studies completed at non-affiliated external entities within the past 12-months and are available through a secure, authorized, media-free, shared archive prior to an imaging study being performed (G9341)
  - OR
  - Search for prior patient completed DICOM format images not completed due to medical reasons (e.g., CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9343)
    - OR
    - Search for prior patient completed DICOM format images not completed due to system reasons (e.g., facility does not have archival abilities through a shared archival system) (G9344)
  - OR
  - Search conducted for prior patient imaging studies completed at non-affiliated external entities within the past 12-months and are available through a secure, authorized, media-free, shared archive prior to an imaging study being performed not completed, reason not given (G9342)
Measure #364: Optimizing Patient Exposure to Ionizing Radiation: Appropriateness: Follow-up CT Imaging for Incidentally Detected Pulmonary Nodules According to Recommended Guidelines

DESCRIPTION:
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 (eg, follow-up CT imaging studies needed or that no follow-up is needed) based at a minimum on nodule size AND patient risk factors

NUMERATOR:
Final reports with documented follow-up recommendations for incidentally detected pulmonary nodules (eg, follow-up CT imaging studies needed or that no follow-up is needed) based at a minimum on nodule size AND patient risk factors

Definitions:
Follow-up Recommendations - No follow-up recommended in the final CT report OR follow-up is recommended within a designated time frame in the final CT report. Recommendations noted in the final CT report should be in accordance with recommended guidelines.

Numerator Options:
- Follow-up recommendations according to recommended guidelines 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 documented (G9345)

- OR

Follow-up recommendations according to recommended guidelines for incidentally detected pulmonary nodules not documented due to medical reasons (e.g., patients with known malignant disease, patients with unexplained fever, CT studies performed for radiation treatment planning or image-guided radiation treatment delivery) (G9346)

- OR

Follow-up recommendations according to recommended guidelines for incidentally detected pulmonary nodules not documented, reason not given (G9347)
Measure #359 - Optimizing Patient Exposure to Ionizing Radiation: Utilization of a Standardized Nomenclature for Computed Tomography (CT) Imaging Description

RATIONALE:
A uniform structure for capturing, indexing, and retrieving a variety of radiology information may facilitate the structured reporting of radiology reports. This will also permit mining of data for participation in research projects, registries, and quality improvement efforts. (RSNA/SIR, 2008)

CLINICAL RECOMMENDATION STATEMENTS:
The existence of a standardized lexicon for radiology would enable numerous improvements in the clinical practice of radiology, starting with the ordering of imaging exams, through the use of information in the resulting radiology report. It also makes possible more effective reuse of information for research and educational purposes. (RSNA, 2009)

Measure #360 - Optimizing Patient Exposure to Ionizing Radiation: Count of Potential High Dose Radiation Imaging Studies: Computed Tomography (CT) and Cardiac Nuclear Medicine Studies

RATIONALE:
Increased CT use has resulted in growing rates of repeat or multiple imaging. (Griffey RT, Sodickson A, 2009)

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. (US Food and Drug Administration, 2010)

CLINICAL RECOMMENDATION STATEMENTS:
Radiologists, medical physicists, radiologic technologists, and all supervising physicians have a responsibility to minimize radiation dose to individual patients, to staff, and to society as a whole, while maintaining the necessary diagnostic image quality. (ACR, 2008)

Measure #361 - Optimizing Patient Exposure to Ionizing Radiation: Reporting to a Radiation Dose Index Registry

RATIONALE:
Clinical registries have become an important tool in efforts to improve quality of care. Registries provide a structured mechanism to monitor clinical practice patterns, evaluate healthcare effectiveness and safety, and evaluate patient outcomes. (Gliklich RE, Dreyer NA, 2007) (Bufalino VJ, Masoudi FA, Stranne SK, et al., 2011)

Establishing diagnostic reference levels is vital to helping clinicians determine optimal radiation dosage to produce acceptable image quality. A data registry would allow facilities to compare their CT dose indices to regional and national values enabling imaging providers and the imaging community to measure the effectiveness of dose lowering efforts over time. (ACR, 2008)

CLINICAL RECOMMENDATION STATEMENTS:
The goal in medical imaging is to obtain image quality consistent with the medical imaging task. Diagnostic reference levels are used to manage the radiation dose to the patient. The medical radiation exposure must be controlled, avoiding unnecessary radiation that does not contribute to the clinical objective of the procedure. By the same token, a dose significantly lower than the reference level may also be cause for concern, since it may indicate that adequate image quality is not being achieved. The specific purpose of the reference level is to provide a benchmark for
comparison, not to define a maximum or minimum exposure limit. For CT, the diagnostic reference levels are based on the volume CT dose index (CTDvol). (ACR, 2008)

Measure #362 - Optimizing Patient Exposure to Ionizing Radiation: Computed Tomography (CT) Images Available for Patient Follow-up and Comparison Purposes

RATIONALE:
The current radiology information systems in hospitals generally do not collect or report radiation exposures and the medical imaging devices that communicate with radiology information systems do not currently forward data on the radiation dose received by a patient from each such test. As a result, physicians are uncertain of their patients’ cumulative exposure and lifetime attributable risk (LAR), which is problematic when assessing, prioritizing and discussing the risks and benefits associated with their patients’ clinical needs. (Sodickson A, Baeyens PF, Andriole KP, et al., 2009)

It has been estimated that between $3 and $10 billion are wasted in the United States annually on unnecessary or duplicative imaging studies. Duplicative imaging procedures could be substantially reduced with improved access to existing imaging data. Additionally, universal access to existing imaging studies to retrieve relevant prior images could improve diagnostic specificity for radiologists and potentially further minimize recommendations for follow-up studies. (Monegain, 2009)

CLINICAL RECOMMENDATION STATEMENTS:
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 (eg, images) with the same efficiency and reliability as possible with small data files (eg, 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.

Optimal patient care requires that care providers and patients be able to create, manage and access comprehensive electronic health records (EHRs) efficiently and securely. The sharing of radiologic images has become a fundamental part of radiology services and is essential for delivering high-quality care. (Flanders AE, 2009)

Measure #363 - Optimizing Patient Exposure to Ionizing Radiation: Search for Prior Computed Tomography (CT) Studies Through a Secure, Authorized, Media-Free, Shared Archive

RATIONALE:
The current radiology information systems in hospitals generally do not collect or report radiation exposures and the medical imaging devices that communicate with radiology information systems do not currently forward data on the radiation dose received by a patient from each such test. As a result, physicians are uncertain of their patients’ cumulative exposure and lifetime attributable risk (LAR), which is problematic when assessing, prioritizing and discussing the risks and benefits associated with their patients’ clinical needs. (Sodickson A, Baeyens PF, Andriole KP, et al., 2009)

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**Measure #364 - Optimizing Patient Exposure to Ionizing Radiation: Appropriateness: Follow-up CT Imaging for Incidentally Detected Pulmonary Nodules According to Recommended Guidelines**

**RATIONALE:**
Pulmonary nodules are commonly encountered in both primary care and specialty settings. Pulmonary nodules require appropriate management to avoid missing early malignancies or conversely subjecting patients to unnecessary follow-up scans. (MacMahon et al., 2005) (ACCP, 2007)

At least 99% of all nodules 4mm or smaller are benign and because such small opacities are common on thin-section CT scans, follow-up CT is not recommended. (Swensen, 2002)

Additionally, there is no conclusive evidence that serial CT studies with early intervention for detected cancers can reduce disease-specific mortality, even in high-risk patients. Therefore, follow-up CT for every small indeterminate nodule is not recommended. (MacMahon et al., 2005)

**CLINICAL RECOMMENDATION STATEMENTS:**
Since the decision to perform follow-up studies relies on size, lesion characteristics (eg, 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.

**Nodule size** ≤ 4 mm
Low-Risk Patient: no follow-up needed†
High-Risk Patient: follow-up at 12 months; if unchanged, no further follow-up‡

**Nodule size** >4-6 mm
Low-Risk Patient: follow-up at CT at 12 months; if unchanged, no further follow-up‡
High-Risk Patient: initial follow-up CT at 6-12 months, then at 18-24 months if no change‡

**Nodule size** >6-8 mm
Low-Risk Patient: initial follow-up CT at 6-12 months, then at 18-24 months if no change
High Risk Patient: initial follow-up CT at 3-6 months, then at 9-12 and 24 months if no change
Nodule size >8 mm
Same for Low- or High-Risk Patient: follow-up CT at around 3, 9, and 24 months, dynamic contrast enhanced
CT, PET, and/or biopsy

Note – Newly detected indeterminate nodule in persons 35 years of age or older.
Low-Risk Patient - minimal or absent history of smoking and of other known risk factors.
High-Risk Patient - history of smoking or of other known risk factors.

* Average of length and width
† The risk of malignancy in this category (<1%) is substantially less than that in a baseline CT scan of an
asymptomatic smoker.
‡ Nonsolid (ground-glass) or partly solid nodules may require longer follow-up to exclude indolent
adenocarcinoma.

These recommendations apply only to adult patients with nodules that are "incidental" in the sense that they are
unrelated to known underlying disease. The following examples describe patients for whom the above guidelines
would not apply:

- Patients known to have or suspected of having malignant disease. Patients with a cancer that may be a cause of
lung metastases should be cared for according to the relevant protocol or specific clinical situation.
- Young patients. Primary lung cancer is rare in persons under 35 years of age (<1% of all cases), and the risks
from radiation exposure are greater than in the older population. Therefore, unless there is a known primary
cancer, multiple follow-up CT studies for small incidentally detected nodules should be avoided in young
patients.
- Patients with unexplained fever. In certain clinical settings, such a patient presenting with neutropenic fever, the
presence of a nodule may indicate active infection, and short-term imaging follow-up or intervention may be
appropriate.

Previous CT scans, chest radiographs, and other pertinent imaging studies should be obtained for comparison
whenever possible, as they may serve to demonstrate either stability or interval growth of the nodule in question. A
low-dose, thin-section, unenhanced technique should be used, with limited longitudinal coverage, when follow-up of a
lung nodule is the only indication for the CT examination. (MacMahon et al., 2005)