

**Quality ID #436: Radiation Consideration for Adult CT: Utilization of Dose Lowering Techniques**  
– National Quality Strategy Domain: Effective Clinical Care  
– Meaningful Measure Area: Appropriate Use of Healthcare

**2021 COLLECTION TYPE:**  
MEDICARE PART B CLAIMS

**MEASURE TYPE:**  
Process

**DESCRIPTION:**  
Percentage of final reports for patients aged 18 years and older undergoing computed tomography (CT) with documentation that one or more of the following dose reduction techniques were used

- Automated exposure control
- Adjustment of the mA and/or kV according to patient size
- Use of iterative reconstruction technique

**INSTRUCTIONS:**  
This measure is to be submitted **each time** a patient has a computed tomography scan during the performance period. There is no diagnosis associated with this measure. It is anticipated that Merit-based Incentive Payment System (MIPS) eligible clinicians who provide the professional component of diagnostic imaging studies for computed tomography will submit this measure.

**Measure Submission Type:**  
Measure data may be submitted by individual MIPS eligible clinicians using Medicare Part B claims. The listed denominator criteria are used to identify the intended patient population. The numerator quality-data codes included in this specification are used to submit the quality actions allowed by the measure on the claim form(s). All measure-specific coding should be submitted on the claim(s) representing the denominator eligible encounter and selected numerator option.

**DENOMINATOR:**  
All final reports for patients aged 18 years and older undergoing CT

**DENOMINATOR NOTE:** \*Signifies that this CPT Category I code is a non-covered service under the Medicare Part B Physician Fee Schedule (PFS). These non-covered services will not be counted in the denominator population for Medicare Part B claims measures.

**Denominator Criteria (Eligible Cases):**  
Patients aged ≥ 18 years on date of encounter

**AND**

**Patient procedure during the performance period (CPT or HCPCS):** 70450, 70460, 70470, 70480, 70481, 70482, 70486, 70487, 70488, 70490, 70491, 70492, 70496, 70498, 71250, 71260, 71270, 71271, 71275, 72125, 72126, 72127, 72128, 72129, 72130, 72131, 72132, 72133, 72191, 72192, 72193, 72194, 73200, 73201, 73202, 73206, 73700, 73701, 73702, 73706, 74150, 74160, 74170, 74174, 74175, 74176, 74177, 74178, 74261, 74262, 74263\*, 75571, 75572, 75573, 75574, 75635, 76380, 76497, 77011, 77012, 77013, 77014, 77078, 0042T, G0297

**NUMERATOR:**  
Final reports with documentation that indicate an individualized dose optimization technique was used for the performed procedure. Dose optimization techniques include the following:

- Automated exposure control
- Adjustment of the mA and/or kV according to patient size
- Use of iterative reconstruction technique

**NUMERATOR NOTE:** *Per exam/report: An individualized exposure protocol/optimization technique per scanner can be included in the report using a macro associated with the exam or procedure.*

*Attestation: Alternatively, a general attestation statement in the final report can suffice to meet the measure; however there should be a written policy in place describing the process that ensures dose optimization techniques are used appropriately per instrument/room, as well as a method for validating that their use occurs for each patient, e.g. periodic audits.*

*Example statement:*

*All CT scans at “location” are performed using dose optimization techniques as appropriate to a performed exam including the following:*

- Automated exposure control
- Adjustment of the mA and/or kV according to patient size (this includes techniques or standardized protocols for targeted exams where dose is matched to indication / reason for exam; i.e. extremities or head)
- Use of iterative reconstruction technique

**Numerator Quality-Data Coding Options:**

**Dose Reduction Techniques**

**Performance Met: G9637:**

Final reports with documentation of one or more dose reduction techniques (e.g., Automated exposure control, adjustment of the mA and/or kV according to patient size, use of iterative reconstruction technique)

**OR**

**Dose Reduction Techniques not Performed**

**Performance Not Met: G9638:**

Final reports without documentation of one or more dose reduction techniques (e.g., Automated exposure control, adjustment of the mA and/or kV according to patient size, use of iterative reconstruction technique)

**RATIONALE:**

Mettler et al. estimate that CT scans account for 17% of total imaging procedures performed in the United States each year and 49% of the collective radiation dose from imaging procedures. Current advances in technology have resulted in several methods to reduce radiation dose for patients undergoing CT. Studies show that the use of CT dose optimization techniques can reduce radiation dose by 40%-50% without sacrificing image quality or diagnostic ability.

**CLINICAL RECOMMENDATION STATEMENTS:**

CT examinations should be performed only for a valid medical reason and with the minimum exposure that provides the image quality necessary for adequate diagnostic information. (ACR, 2011)

Radiologists, medical physicists, registered radiologist assistants, radiologic technologists, and all supervising physicians have a responsibility for safety in the workplace by keeping radiation exposure to staff, and to society as a whole, “as low as reasonably achievable” (ALARA) and to assure that radiation doses to individual patients are appropriate, taking into account the possible risk from radiation exposure and the diagnostic image quality

necessary to achieve the clinical objective. (ACR, 2011)

Facilities, in consultation with the medical physicist, should have in place and should adhere to policies and procedures, in accordance with ALARA, to vary examination protocols to take into account patient body habitus, such as height and/or weight, body mass index or lateral width. The dose reduction devices that are available on imaging equipment should be active; if not, manual techniques should be used to moderate the exposure while maintaining the necessary diagnostic image quality. Periodically, radiation exposures should be measured and patient radiation doses estimated by a medical physicist in accordance with the appropriate ACR Technical Standard. (ACR, 2011)

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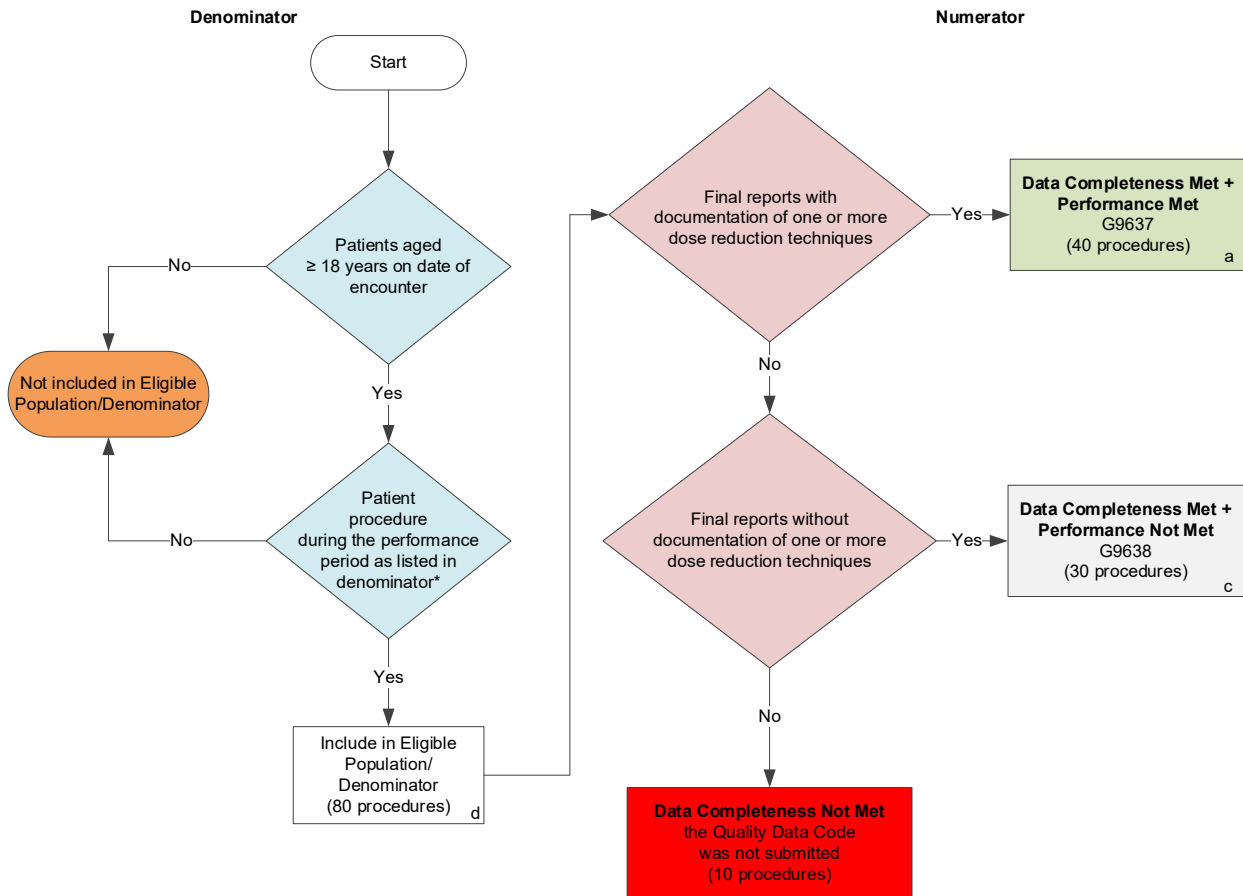
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**2021 Medicare Part B Claims Flow for Quality ID #436:  
Radiation Consideration for Adult CT: Utilization of Dose Lowering Techniques**

*Disclaimer: Refer to the measure specification for specific coding and instructions to submit this measure.*



**SAMPLE CALCULATION**

**Data Completeness=**  

$$\frac{\text{Performance Met (a=40 procedures)} + \text{Performance Not Met (c=30 procedures)}}{\text{Eligible Population / Denominator (d=80 procedures)}} = \frac{70 \text{ procedures}}{80 \text{ procedures}} = 87.50\%$$

**Performance Rate=**  

$$\frac{\text{Performance Met (a=40 procedures)}}{\text{Data Completeness Numerator (70 procedures)}} = \frac{40 \text{ procedures}}{70 \text{ procedures}} = 57.14\%$$

\* See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Procedure

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The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.

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**2021 Medicare Part B Claims Flow Narrative for Quality ID #436:  
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**Disclaimer:** Refer to the measure specification for specific coding and instructions to submit this measure.

1. Start with Denominator
2. Check *Patients aged greater than or equal to 18 years on date of encounter*.
  - a. If *Patients aged greater than or equal to 18 years on date of encounter* equals No, do not include in Eligible Population/Denominator. Stop processing.
  - b. If *Patients aged greater than or equal to 18 years on date of encounter* equals Yes, proceed to check *Patient procedure during the performance period as listed in Denominator\**.
3. Check *Patient procedure during the performance period as listed in Denominator\**:
  - a. If *Patient procedure during the performance period as listed in Denominator\** equals No, do not include in *Eligible Population/Denominator*. Stop processing.
  - b. If *Patient procedure during the performance period as listed in Denominator\** equals Yes, include in *Eligible Population/Denominator*.
4. Denominator Population:
  - Denominator Population is all Eligible Procedures in the denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 80 procedures in the Sample Calculation.
5. Start Numerator
6. Check *Final reports with documentation of one or more dose reduction techniques*:
  - a. If *Final reports with documentation of one or more dose reduction techniques* equals Yes, include in *Data Completeness Met and Performance Met*.
    - *Data Completeness Met and Performance Met* letter is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a equals 40 procedures in the Sample Calculation.
  - b. If *Final reports with documentation of one or more dose reduction techniques* equals No, proceed to check *Final reports without documentation of one or more dose reduction techniques*.
7. Check *Final reports without documentation of one or more dose reduction techniques*:
  - a. If *Final reports without documentation of one or more dose reduction techniques* equals Yes, include in *Data Completeness Met and Performance Not Met*.
    - *Data Completeness Met and Performance Not Met* letter is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 30 procedures in the Sample Calculation.
  - b. If *Final reports without documentation of one or more dose reduction techniques* equals No, proceed to check *Data Completeness Not Met*.

8. Check *Data Completeness Not Met*.

- a. If *Data Completeness Not Met*, the Quality Data Code was not submitted. 10 procedures have been subtracted from the Data Completeness Numerator in the Sample Calculation.

**Sample Calculations**

Data Completeness equals Performance Met (a equals 40 procedures) plus Performance Not Met (c equals 30 procedures) divided by Eligible population/Denominator (d equals 80 procedures). All equals 70 procedures divided by 80 procedures. All equals 87.50 percent.

Performance Rate equals Performance Met (a equals 40 procedures) divided by Data Completeness Numerator (70 procedures). All equals 40 procedures divided by 70 procedures. All equals 57.14 percent.

\* See the posted measure specification for specific coding and instructions to submit this measure.

NOTE: Submission Frequency: Procedure

The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.