



Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 0669

Corresponding Measures:

De.2. Measure Title: Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac, Low-Risk Surgery

Co.1.1. Measure Steward: Centers for Medicare & Medicaid Services

De.3. Brief Description of Measure: This measure calculates the percentage of stress echocardiography, single photon emission computed tomography myocardial perfusion imaging (SPECT MPI), stress magnetic resonance imaging (MRI), or computed coronary tomography angiography (CCTA) performed at each facility in the 30 days prior to an ambulatory non-cardiac, low-risk surgery performed at any location. The measure is calculated based on a one-year window of Medicare claims data. The measure has been publicly reported, annually, by the Centers for Medicare & Medicaid Services (CMS), since 2011, as a component of its Hospital Outpatient Quality Reporting (OQR) Program.

1b.1. Developer Rationale: Cardiac imaging is among the most common imaging services in the Medicare population, and has experienced significant growth in the past decade. Nuclear imaging has been one of the major contributors to the growth in radiation exposure in the Medicare population. The "Preoperative Evaluation for Non-Cardiac, Low Risk Surgery" measure is an imaging efficiency measure that provides a benchmark level of performance, and, thus, furthers the effort to promote the appropriate use of cardiac imaging services.

S.4. Numerator Statement: The number of stress echocardiography, SPECT MPI, stress MRI, and CCTA tests performed in a hospital outpatient department within 30 days of an ambulatory non-cardiac, low-risk surgery performed at any location (e.g., same hospital, other hospital, or physician's office), for Medicare beneficiaries aged 18 years and older.

S.6. Denominator Statement: The number of stress echocardiography, SPECT MPI, stress MRI, and CCTA studies performed in a hospital outpatient department on Medicare beneficiaries within a 12-month time window, for Medicare beneficiaries aged 18 years and older.

S.8. Denominator Exclusions: Studies are excluded for any patients with diagnosis codes in at least three of the following categories: diabetes mellitus, renal insufficiency, stroke or transient ischemic attack, prior heart failure, or ischemic heart disease. Studies performed in the ED or within the 30 days following an ED encounter are also excluded from the measure's initial patient population.

De.1. Measure Type: Efficiency

S.17. Data Source: Claims

S.20. Level of Analysis: Facility, Other, Population : Regional and State

IF Endorsement Maintenance – Original Endorsement Date: Apr 26, 2011 **Most Recent Endorsement Date:** Feb 19, 2016

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results? Not applicable; this is not a paired or grouped measure.

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and

improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.**

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[0669_MeasureEvidenceForm_2020.docx](#)

1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?

Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

No

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. Briefly explain the rationale for this measure (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.

Cardiac imaging is among the most common imaging services in the Medicare population, and has experienced significant growth in the past decade. Nuclear imaging has been one of the major contributors to the growth in radiation exposure in the Medicare population. The “Preoperative Evaluation for Non-Cardiac, Low Risk Surgery” measure is an imaging efficiency measure that provides a benchmark level of performance, and, thus, furthers the effort to promote the appropriate use of cardiac imaging services.

1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis. (This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.

Analysis indicates that there is variation between facilities in the use of cardiac imaging prior to non-cardiac, low-risk surgery. For the period from July 2016 through June 2017, performance scores ranged from 0.0% to 15.4%, with a mean national performance rate of 4.5% (IQR: 3.4%–5.6%). Mean performance peaked in 2010 and 2011, at 5.5%, and falling to 4.5% for the period from July 2016 through June 2017.

Descriptive statistics reported below are for the 1,811 facilities that met minimum case count requirements in all years (2010 through 2017). By restricting this analysis to facilities that met the public reporting requirements in all years, we are able to look at any trends in performance over the period of public reporting.

Further details on the descriptive statistics for longitudinal facility performance are included below:

	2012*	2013*	2014**	2015**	2016**	2017**	2018**
Measurement Period	January 2010– December 2010		January 2011– December 2011		July 2012–June 2013		July 2013–June 2014
	July 2014–June 2015		July 2015–June 2016		July 2016–June 2017		
Facilities	1,811	1,811	1,811	1,811	1,811	1,811	1,811
Minimum Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1st Percentile	1.4%	1.5%	1.2%	0.7%	0.9%	0.9%	0.0%
5th Percentile	2.5%	2.7%	2.6%	1.9%	1.9%	1.9%	1.7%
10th Percentile	3.2%	3.3%	3.2%	2.6%	2.6%	2.5%	2.3%
25th Percentile	4.3%	4.3%	4.2%	3.8%	3.6%	3.6%	3.4%
Median	5.4%	5.3%	5.1%	4.8%	4.7%	4.7%	4.5%
75th Percentile	6.7%	6.6%	6.4%	6.1%	5.9%	5.8%	5.6%
90th Percentile	8.1%	7.9%	7.6%	7.6%	7.2%	7.1%	6.7%
95th Percentile	9.1%	8.9%	8.5%	8.5%	8.2%	8.2%	7.5%
99th Percentile	11.3%	11.6%	10.6%	10.8%	9.9%	10.4%	9.4%
Maximum Value	16.0%	17.0%	15.1%	18.0%	15.8%	16.5%	15.4%
Mean Performance (Standard Deviation)	5.6% (4.3%–6.7%)		5.5% (4.3%–6.6%)		5.3% (4.2%–6.4%)		5.0% (3.8%–6.1%)
	4.8% (3.6%–5.9%)		4.5% (3.4%–5.6%)				

*The measurement period for Hospital OQR data reported from 2011 through 2013 ran from January through December. Beginning with 2014 public reporting, the measurement period for Hospital OQR was adjusted to run from July through June; consequently, data are not reported for January through June 2012.

**Beginning with 2014 public reporting, calculation of OP-13 performance scores switched from using Data Extract System (DESY) database data to HAI database data. Both databases contain Medicare Part A and Part B FFS claims; the shift does result, however, in a slight change in the distribution of performance across years.

*** Methods used to apply a minimum case count to facilities eligible to report OP-13 are available on page 26 of the OP-13 reevaluation report (available here: <https://www.qualitynet.org/outpatient/measures/imaging-efficiency/resources>).

One of the intentions for reporting this measure is to identify facilities with significant outlying performance. As shown in the table above, many facility scores cluster around a value of 3% to 6%; outlying performance persists, however, indicating there are facilities for which a notable rate of overuse continues despite the national improvement in performance.

1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

Data have been included in Section 1b.2; these data represent national performance over time, from 2010 to 2017.

1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. (*This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.*) For measures that show high levels of performance, i.e., “topped out”, disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.

To assess disparities in care, we performed a quantitative analysis of variations in care for patient and facility characteristics. Using performance data from July 2016 through June 2017, we evaluated the effect of patient and facility characteristics on the likelihood of each beneficiary having a cardiac imaging procedure occur prior to a non-cardiac, low-risk surgery. Using a logistic regression model, we assessed the impact of patient and facility characteristics for the 25,807 cardiac-imaging procedures performed from July 2016 through June 2017 at facilities meeting the minimum case count requirements after applying measure exclusions.

The logistic regression indicated that racial or ethnic identification and facility characteristics had a significant relationship with the rate of inappropriate pre-operative cardiac imaging. The primary finding from the regression model is that patient racial/ethnic identification has a statistically significant effect on the likelihood that a patient undergoes inappropriate pre-operative imaging. African-Americans were slightly less likely to undergo inappropriate pre-operative cardiac imaging when compared to white beneficiaries (OR 0.905, p=0.003).

Facility characteristics also played a role in determining whether a non-cardiac, low-risk surgery was performed following a cardiac-imaging study. When compared to non-profit facilities, for-profit facilities were less likely to perform inappropriate pre-operative imaging (OR 0.908, p=0.0004). A facility's urbanicity impacted a beneficiary's likelihood of having cardiac imaging performed pre-operatively—urban facilities were more likely than rural facilities to be associated with inappropriate pre-operative imaging (OR 1.071, p=0.009).

1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4

A review of the literature for population-based disparities in the inappropriate use of cardiac imaging found four studies on the topic, which describe disparities in care across age, gender, and racial/ethnic identification. Sheffield et al. (2013) analyzed the overuse of pre-operative stress testing and found that inappropriate stress testing prior to low-risk surgery was more likely for females. The study also found that living in a region with higher Medicare expenditures was associated with higher rates of pre-operative stress testing.

There is additional literature more broadly addressing population disparities for the use of diagnostic imaging. Hendel et al. (2010) assessed the use of SPECT MPI, finding that women and younger patients were more likely to undergo inappropriate SPECT MPI studies. This study, however, is not restricted to the Medicare population, and examines inappropriate SPECT MPI use for a variety of cases, not just prior to low-risk surgery.

Lucas et al. (2006) evaluated the utilization of imaging stress tests in the Medicare population, finding that non-black males have the highest rate of utilization, followed by non-black females, black males, and finally black females. The study indicates a disparity in

utilization based on both race and gender; one limitation of this study is that it does not report outcomes based on income, age, or other factors. While the study demonstrates a gap in utilization of diagnostic imaging, it does not indicate whether the utilization is considered appropriate or inappropriate. Sistrom et al. (2012) examined diagnostic imaging utilization, finding that race was a determinant in the likelihood of receiving a diagnostic imaging test.

While the regression model and literature review identified subpopulations of patients and facilities for which there are statistically significant differences in imaging prior to non-cardiac, low-risk surgery, these disparities do not indicate a need for adjustment of the measure specifications. Adjusting for these differences would mask underlying differences in quality of care. As this is a process measure, there should be no difference in the standard of care for various patient populations. Because we believe these statistically significant differences are driven by variation in provider practice, we do not believe risk adjustment or stratification is necessary or appropriate for this measure.

REFERENCES:

1. Lucas L, DeLorenzo M, Siewers A, Wennberg D. Treatments for Cardiovascular Disease in the United States, 1993-2001. *Circulation*. 2006; 113:374-379.
2. Hendel R, Cergueira M, Douglas P, et al. A multicenter assessment of the use of single-photon emission computed tomography myocardial perfusion imaging with appropriateness criteria. *J Am Coll Cardiol*. 2010; 55(2):156-62.
3. Sheffield K, McAdams P, Benarroch-Gampel J, et al. Overuse of pre-operative cardiac stress testing in Medicare patients undergoing elective noncardiac surgery. *Ann Surg*. 2013; 257(1):73-80.
4. Sistrom C, McKeay N, Weilburg J, et al. Determinants of diagnostic imaging utilization in primary care. *Am J Manag Care*. 2012; 18(4): e135-44

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. ***Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.***

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. Subject/Topic Area (check all the areas that apply):
[Cardiovascular, Surgery, Surgery : General Surgery](#)

De.6. Non-Condition Specific(check all the areas that apply):
[Safety, Safety : Overuse, Screening](#)

De.7. Target Population Category (Check all the populations for which the measure is specified and tested if any):
[Adults, Elderly](#)

S.1. Measure-specific Web Page (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)
https://qualitynet.org/files/5d0d370e764be766b0100f3f?filename=OP-13_2019_ReevalReport.pdf

S.2a. If this is an eMeasure, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)
This is not an eMeasure Attachment:

S.2b. Data Dictionary, Code Table, or Value Sets (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)
Attachment Attachment: [0669_CodeSets_2020.xlsx](#)

S.2c. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

No, this is not an instrument-based measure **Attachment:**

S.2d. Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Not an instrument-based measure

S.3.1. For maintenance of endorsement: Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

Yes

S.3.2. For maintenance of endorsement, please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

Certain settings of care necessitate excluding cases from the NQF 0669 initial patient population, as pre-operative cardiac imaging may be appropriate for these patients. For this measure, cardiac imaging performed within the 30 days following an emergency department (ED) encounter was added as an exclusion to the measure specifications in 2019, because those cardiac imaging studies performed in the ED or immediately following an ED visit often have a different clinical indication than those performed in other hospital outpatient care settings.

S.4. Numerator Statement (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

The number of stress echocardiography, SPECT MPI, stress MRI, and CCTA tests performed in a hospital outpatient department within 30 days of an ambulatory non-cardiac, low-risk surgery performed at any location (e.g., same hospital, other hospital, or physician's office), for Medicare beneficiaries aged 18 years and older.

S.5. Numerator Details (All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)

IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

Numerator: Stress echocardiography, SPECT MPI, stress MRI, and CCTA tests occurring within 30 days of an ambulatory non-cardiac, low-risk surgery, within a 12-month time window (July 1 – June 30).

Denominator: Stress echocardiography, SPECT MPI, stress MRI, and CCTA tests within an 11-month time window (July 1 – May 31).

The numerator is defined by the following categories of surgical procedures:

- Surgery/Integumentary System: Breast
- Surgery/Respiratory System: Accessory Sinuses
- Surgery/Respiratory System: Larynx
- Surgery/Respiratory System: Trachea and Bronchi
- Surgery/Respiratory System: Lungs and Pleura
- Surgery/Digestive System: Esophagus
- Surgery/Digestive System: Intestines (Except Rectum)
- Surgery/Digestive System: Rectum
- Surgery/Digestive System: Anus
- Surgery/Digestive System: Biliary Tract
- Surgery/Digestive System: Abdomen, Peritoneum, and Omentum
- Surgery/Urinary System: Kidney
- Surgery/Urinary System: Ureter
- Surgery/Urinary System: Bladder
- Surgery/Female Genital System: Cervix Uteri
- Surgery/Female Genital System: Corpus Uteri
- Surgery/Female Genital System: Oviduct/Ovary

-Surgery/Eye and Ocular Adnexa: Anterior Segment
-Other Surgeries

(Specific CPT codes for each condition class are included in the value set for this measure; this detailed list can be found in the Excel workbook provided for Section S.2b.)

S.6. Denominator Statement *(Brief, narrative description of the target population being measured)*

The number of stress echocardiography, SPECT MPI, stress MRI, and CCTA studies performed in a hospital outpatient department on Medicare beneficiaries within a 12-month time window, for Medicare beneficiaries aged 18 years and older.

S.7. Denominator Details *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

The following CPT code categories are used to identify the measure denominator population:

SPECT MPI (OID: 2.16.840.1.113883.3.3157.13202)

-CPT 78464, 78451, 78465, 78452

Stress echocardiography (OID: 2.16.840.1.113883.3.3157.13213)

-CPT 93350 C8928 and 93351 C8930

Stress MRI (OID: 2.16.840.1.113883.3.3157.13222)

-CPT 75559 and 75563

CCTA (OID: 2.16.840.1.113883.3.3157.1323)

-CPT 75571, 75572, 75573, and 75574

The denominator time window is limited to any day within a one-year window of claims data.

Global and technical-component (TC) claims should be considered to capture all outpatient volume facility claims, typically paid under the Outpatient Prospective Payment System (OPPS)/Ambulatory Payment Classifications (APC) methodology, and to avoid double counting of professional-component claims (i.e., 26 modifier). A technical unit can be identified by a modifier code of TC. A global unit can be identified by the absence of a TC or 26 modifier code.

SPECT MPI, stress echocardiography, stress MRI, and CCTA tests can be billed separately for the technical and professional components or billed globally, which includes both the professional and technical components.

S.8. Denominator Exclusions *(Brief narrative description of exclusions from the target population)*

Studies are excluded for any patients with diagnosis codes in at least three of the following categories: diabetes mellitus, renal insufficiency, stroke or transient ischemic attack, prior heart failure, or ischemic heart disease.

Studies performed in the ED or within the 30 days following an ED encounter are also excluded from the measure's initial patient population.

S.9. Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*

Studies are excluded for any patients with diagnosis codes in at least three of the following categories:

Diabetes (look back of one year)

Diabetes mellitus

ICD-9 codes 249, 250, 648.0X

ICD-10 codes E08.00–E11.9, E13.0–E13.9

Diabetes mellitus in pregnancy, childbirth, and the puerperium

ICD-10 codes O24.011–O24.33, O24.811–O24.93

Renal Insufficiency (look back of one year)

Renal insufficiency

ICD-9 codes 403, 404, 580, 582, 583, 584, 585, 586, 593.9

Hypertensive chronic kidney disease

ICD-10 codes I12.0–I12.9

Hypertensive heart and chronic kidney disease

ICD-10 codes I13.0–I13.2

Glomerular diseases

ICD-10 codes N00.0–N01.9, N03.0–N03.9, N05.0–N08

Acute kidney failure and chronic kidney disease

ICD-10 codes N17.0–N19

Other disorders of kidney and ureter

ICD-10 codes N28.9–N29

Stroke or transient ischemic attack (look back of three years)

ICD-9 codes 430, 431, 432, 433, 434, 435, 436, 437, 438, 674.0X, 997.02

Transient cerebral ischemic attacks and related syndromes

ICD-10 codes G45.0–G45.2, G45.8–G45.9

Vascular syndromes of brain in cerebrovascular diseases

ICD-10 codes G46.0–G46.2

Cerebrovascular diseases

ICD-10 codes I60.00–I63.9, I65.21–I65.29, I66.01–I66.9, I67.1, I67.841–I67.89, I69.00–I69.998, I97.81–I97.82

Diseases of the circulatory system complicating pregnancy, childbirth and the puerperium

ICD-10 codes O99.411–O99.43

Prior heart failure (look back of three years)

Prior heart failure

ICD-9 codes 425, 428, 429

Other forms of heart disease

ICD-10 codes I42.0–I43

Heart failure

ICD-10 codes I50.1–I50.9

Intraoperative and post-procedural complications and disorders of circulatory system, not elsewhere classified

ICD-10 codes I97.0–I97.191

Complications and ill-defined descriptions of heart disease

ICD-10 codes I51.0–I51.9

Ischemic heart disease (look back of three years)

Ischemic heart disease

ICD-9 codes 410, 411, 412, 413, 414

ICD-10 codes I20.0–I22.9, I24.8–I25.119, I25.700–I25.799

Studies are excluded for patients with any of the following CPT codes:

Emergency department encounter (same day or 30 days preceding the imaging study)

CPT codes 99281–99285, 99291

S.10. Stratification Information (Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)

Not applicable; this measure does not stratify its results.

S.11. Risk Adjustment Type (Select type. Provide specifications for risk stratification in measure testing attachment)

No risk adjustment or risk stratification

If other:

S.12. Type of score:

Other (specify):

If other: Percentage

S.13. Interpretation of Score (Classifies interpretation of score according to whether better quality is associated with a higher score,

a lower score, a score falling within a defined interval, or a passing score)

Better quality = Lower score

S.14. Calculation Algorithm/Measure Logic (Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data; aggregating data; risk adjustment; etc.)

This measure calculates the percentage of SPECT MPI, stress echocardiography, stress MRI, and CCTA tests that are performed within the 30 days preceding a non-cardiac, low-risk surgery, out of all SPECT MPI, stress echocardiography, and stress MR studies performed for Medicare beneficiaries 18 years and older. The measure is calculated based on one year of hospital outpatient claims data, as follows:

1. Select hospital outpatient claims with a CPT code for any SPECT MPI, stress echocardiography, or stress MR on a revenue line item for patients 18 years and older
2. Exclude professional component only claims with modifier = '26'
3. Exclude cases with three or more exclusion diagnoses occurring during the look back period for each diagnosis
4. Exclude patients with a CPT code for an ED encounter that was billed on the same day or the 30 days preceding an imaging study
5. Set denominator counter = 1
6. Set numerator counter = 1 if a non-cardiac, low-risk surgery occurs within the 30 days following the SPECT MPI, stress echocardiography, or stress MR from step 1, above
7. Aggregate denominator and numerator counts by Medicare provider number
8. Measure = numerator counts / denominator counts [The value should be recorded as a percentage]

S.15. Sampling (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

IF an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.

This measure relies exclusively on 100 percent Medicare fee-for-service (FFS) standard analytical file (SAF) data; no sampling of beneficiaries was performed.

S.16. Survey/Patient-reported data (If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)

Specify calculation of response rates to be reported with performance measure results.

This measure does not use survey data.

S.17. Data Source (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.18.

Claims

S.18. Data Source or Collection Instrument (Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)

IF instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

The measure does not make any adjustments for missing data. The measure relies on Medicare claims data, which are used for payment purposes for services rendered by a provider. The data undergo prepayment claims analysis and post payment audits, as part of the CMS administrative process. The analytic files used by the measure developer are post-adjudicated claims.

S.19. Data Source or Collection Instrument (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

No data collection instrument provided

S.20. Level of Analysis (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Facility, Other, Population : Regional and State

S.21. Care Setting (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Outpatient Services

If other:

S.22. COMPOSITE Performance Measure - Additional Specifications (Use this section as needed for aggregation and weighting rules,

or calculation of individual performance measures if not individually endorsed.)

Not applicable; this is not a composite measure.

2. Validity – See attached Measure Testing Submission Form

[NQF0669_MeasureTestingForm_2020.docx](#)

2.1 For maintenance of endorsement

Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.2 For maintenance of endorsement

Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.

Yes

2.3 For maintenance of endorsement

Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1,2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.

No - This measure is not risk-adjusted

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. Data Elements Generated as Byproduct of Care Processes.

[Coded by someone other than person obtaining original information \(e.g., DRG, ICD-9 codes on claims\)](#)

If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. To what extent are the specified data elements available electronically in defined fields (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields) Update this field for **maintenance of endorsement**.

[ALL data elements are in defined fields in electronic claims](#)

3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources. For **maintenance of endorsement,** if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

[Not applicable because all data elements originate in electronic sources.](#)

3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.

Attachment:**3c. Data Collection Strategy**

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. Required for maintenance of endorsement. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

IF instrument-based, consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

This measure is claims based and uses CMS hospital outpatient claims as its data source.

Special attention needs to be taken when counting procedures on the Medicare claims files. The biggest issue is how to deal with modifier codes. Modifiers are two digit indicators (alpha or numeric) that represent a service or procedure that has been altered by some specific circumstance, which typically will impact the payment amount.

Procedure modifier code "26" represents the professional component of a procedure and includes the clinician work (i.e., the reading of the image by a physician), associated overhead and professional liability insurance costs. This modifier corresponds to the human involvement in a given service or procedure.

The procedure modifier code "TC" represents the technical component of a service or procedure and includes the cost of equipment and supplies to perform that service or procedure. This modifier corresponds to the equipment/facility part of a given service or procedure.

In most cases, unmodified codes represent a global procedure which includes both the professional and technical components.

There are also other modifier codes. All other modifier codes have been counted as a technical code for our purposes. When calculating the measures, we are only concerned with procedures associated with technical and global modifiers, as these modifiers refer to services provided by the facility. This reduces the possibility of double-counting procedures, since a single procedure may result in both a technical and professional record on the claims files. There were very few instances when this occurred as it related to procedures applicable to the measure.

When developing counts of procedures, the objective is to avoid double-counting procedures that may have been billed through multiple revenue centers within a facility. Billing through multiple centers leads to multiple records in the Medicare claims files (i.e., the SAFs). For instance, there may be multiple bills for a single SPECT MPI. On one bill, the charges relate to the application of a radiopharmaceutical, which could have a technical modifier code and come from the pharmacy revenue center. On the other bill, the charges relate to the imaging study and may fall under a technical bill from the imaging center revenue center. In this case, we only count the SPECT MPI once, since only one SPECT MPI was performed. However, if we were summing up the Medicare paid amounts for this procedure, we would include the Medicare paid amounts from both bills, as they each represent payments for services directly related to the particular SPECT MPI procedure.

3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).

No fees, licensure, or other requirements are necessary to use this measure; however, CPT codes, descriptions, and other data are copyright 2018 American Medical Association. All rights reserved. CPT is a registered trademark of the American Medical Association. Applicable FARS\DFARS Restrictions Apply to Government Use. Fee schedules, relative value units, conversion factors, and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are

publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. Current and Planned Use

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)
	<p>Public Reporting</p> <p>Hospital Outpatient Quality Reporting http://www.medicare.gov/hospitalcompare/search.html</p> <p>Hospital Outpatient Quality Reporting https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228695266120</p> <p>Hospital Outpatient Quality Reporting http://www.medicare.gov/hospitalcompare/search.html</p> <p>Hospital Outpatient Quality Reporting https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228695266120</p> <p>Quality Improvement (external benchmarking to organizations)</p> <p>Hospital Outpatient Quality Reporting - Medicare Hospital Compare http://www.medicare.gov/hospitalcompare/search.html</p> <p>Hospital Outpatient Quality Reporting https://www.qualitynet.org/outpatient/measures/imaging-efficiency</p>

4a1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

Public Reporting:

Name of program and sponsor: The CMS Hospital Outpatient Quality Reporting (OQR) Program

Purpose: The Hospital OQR Program is a pay for quality data reporting program implemented by CMS for outpatient hospital services. In addition to providing hospitals with a financial incentive to report their quality of care measure data, the Hospital OQR Program provides CMS with data to help Medicare beneficiaries make more informed decisions about their health care. Hospital quality of care information gathered through the Hospital OQR Program is publicly available on the Hospital Compare website.

Accountable entities and patients: The publicly reported values (on Hospital Compare) are calculated for all facilities participating in the Hospital OQR Program in the United States that meet minimum case count requirements. During the July 2016 through June 2017 data collection period, 2,402 facilities met the minimum case count. Additional facilities met the minimum case count requirements in some, but not all, years. The claims included in the publicly reported calculations are for Medicare FFS patients whose claims are subject to the Outpatient Prospective Payment System (OPPS).

Methods used to apply a minimum case count to facilities eligible to report OP-13 are available on page 26 of the OP-13 reevaluation report (available here: <https://www.qualitynet.org/outpatient/measures/imaging-efficiency/resources>).

Quality Improvement with Benchmarking (external benchmarking to multiple organizations):

Name of program and sponsor: The CMS Hospital OQR Program

Purpose: The Hospital OQR Program is a pay for quality data reporting program implemented by CMS for outpatient hospital services. In addition to providing hospitals with a financial incentive to report their quality of care measure data, the data is publicly reported on the Hospital Compare Website. The data reported on Hospital Compare not only shows the hospital's score on the measure, but also provides state and national averages for the measure. This enables consumers to compare the hospital's performance to other facilities and determine if the facility is an outlier.

Accountable entities and patients: The publicly reported values (on Hospital Compare) are calculated for all facilities participating in

the Hospital OQR Program in the United States that meet minimum case count requirements. For the period of July 2016 to June 2017, 2,402 facilities met the minimum case count each year. Additional facilities met the minimum case count requirements in some, but not all, years. The claims included in the publicly reported calculations are for Medicare FFS patients whose claims are subject to the OPPS.

Methods used to apply a minimum case count to facilities eligible to report OP-13 are available on page 26 of the OP-13 reevaluation report (available here: <https://www.qualitynet.org/outpatient/measures/imaging-efficiency/resources>).

4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)

This measure is publicly reported.

4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)

This measure is publicly reported.

4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

Data for NQF 0669 are publicly available on CMS's Hospital Compare website, which are refreshed annually in July. During the preview period in advance of each year's refresh, CMS distributes preview reports and facility-specific reports (FSRs). The preview report contains a summary of the facility's score on a number of metrics, including NQF 0669; the FSR contains claims-level detail for all cases included in the calculation of NQF 0669. All facilities eligible to report NQF 0669 receive a preview report and FSR each year, regardless of whether they have sufficient cases to publicly report NQF 0669.

4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

CMS provides facilities with claims-level information for NQF 0669 annually through a facility specific report (FSR). Each site's FSR contains all claims included and excluded from calculation. An FSR User Guide is available on CMS's QualityNet website (<https://www.qualitynet.org/outpatient/measures/imaging-efficiency/reports>), which guides stakeholders through how to interpret the data contained in their FSR.

Stakeholders can connect with CMS's contractors for NQF 0669 via the QualityNet Q&A tool (https://cmsqualitysupport.service-now.com/qnet_qa), through which they can submit questions about the specifications for NQF 0669 and on the data contained in the preview report/FSR.

4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.

Describe how feedback was obtained.

Feedback received from stakeholders (via the QualityNet Q&A tool) is used to revise the measure specifications. Following receipt of a suggestion to adjust the specifications, a literature review is performed to determine if the proposed change aligns with the empirical evidence base for the measure; feedback from the expert work group is obtained to evaluate the change to the specifications. To date, we have received no significant concerns raised by stakeholders about the measure specifications through the QualityNet Q&A tool.

In addition, stakeholders may submit comments on the measure through the Outpatient Prospective Payment System (OPPS) annual rulemaking process. No comments were received for this measure during the Calendar Year (CY) 2016-2019 OPPS rulemaking cycles.

4a2.2.2. Summarize the feedback obtained from those being measured.

To date, we have received no significant feedback about the measure specifications.

4a2.2.3. Summarize the feedback obtained from other users

To date, we have received no significant feedback about the measure specifications.

4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

To date, we have received no significant feedback about the measure specifications.

Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)

If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

Summary statistics of performance scores during the January 2010 through December 2010, January 2011 through December 2011, July 2012 through June 2013, July 2013 through June 2014, July 2014 through June 2015, July 2015 through June 2016, and July 2016 through June 2017 data collection periods are provided in Section 1b.2.

For the 1,811 facilities that met minimum case count requirements for 2012, 2013, 2014, 2015, 2016, 2017, and 2018 public reporting, there has been moderate improvement in facility performance on OP-13 since the beginning of public reporting—the measure median was 5.4% in 2012 and 4.5% in 2018, with a consistent downward trend in performance scores across all percentiles, since 2014.

Methods used to apply a minimum case count to facilities eligible to report OP-13 are available on page 26 of the OP-13 reevaluation report (available here: <https://www.qualitynet.org/outpatient/measures/imaging-efficiency/resources>).

4b2. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.

We did not identify any unintended consequences during measure testing. Similarly, no evidence of unintended consequences to individuals or populations have been reported since implementation. We will continue to monitor the potential for unintended consequences through an annual review of the literature as well as an ongoing review of stakeholder comments and inquiries.

4b2.2. Please explain any unexpected benefits from implementation of this measure.

We did not identify any unintended consequences from implementing this measure.

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.
Yes

5.1a. List of related or competing measures (selected from NQF-endorsed measures)

0670 : Cardiac stress imaging not meeting appropriate use criteria: Preoperative evaluation in low risk surgery patients

5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.

American College of Cardiology (ACC) - Perioperative protocol: percentage of patients undergoing elective non-high-risk surgery

having laboratory tests/imaging unrelated to positive findings on preoperative basic health assessment

5a. Harmonization of Related Measures

The measure specifications are harmonized with related measures;

OR

The differences in specifications are justified

5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):

Are the measure specifications harmonized to the extent possible?

No

5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

Although NQF #0669 is similar to NQF #0670, there are several differences that would make measure harmonization infeasible and reduce the effectiveness of both currently endorsed measures. First, the measures serve different target populations and purposes: the CMS measure is used for public reporting and the measure calculations only include CMS FFS claims; on the other hand, the ACC measure is not restricted to the Medicare population and the measure calculations are sold to hospitals as part of a quality improvement package, rather than used for public reporting. Second, the measures include different stress testing procedures: the ACC measure (NQF #0670) includes SPECT MPI, stress echocardiography, CCTA, and CMR procedures codes in the denominator, whereas the CMS measure (NQF #0669) includes SPECT MPI, stress echocardiography, and stress MR procedure codes. Finally, the ACC measure relies on a different data source than does the CMS measure: unlike the CMS measure, the ACC measure does not account for instances where the imaging and low risk surgery occur at different facilities. While NQF #0669 is related to the ACC measure, significant structural differences makes measure harmonization inappropriate for these measures. The denominator of the ACC measure is defined by low-risk surgery cases, whereas the denominator of the CMS measure is defined by cardiac imaging studies. The ACC measure also relies on test results for measure calculation, a data element not available in CMS administrative claims data. Finally, the ACC measure includes patients aged 2 years and older while the CMS measure is targeted to the Medicare population.

5b. Competing Measures

The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);

OR

Multiple measures are justified.

5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):

Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

We did not identify any competing measures that address both the same measure focus and target population as NQF #0669.

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.

No appendix Attachment:

Contact Information

Co.1 Measure Steward (Intellectual Property Owner): Centers for Medicare & Medicaid Services

Co.2 Point of Contact: Helen, Dollar-Maples, Helen.Dollar-Maples@cms.hhs.gov, 410-786-7214-

Co.3 Measure Developer if different from Measure Steward: The Lewin Group

Co.4 Point of Contact: Colleen, McKiernan, Colleen.McKiernan@lewin.com, 703-269-5595-

Additional Information

Ad.1 Workgroup/Expert Panel involved in measure development

Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

From 2011 to 2019, the contractor convened a technical expert panel (TEP), which evaluated and provided feedback on measure-development and maintenance efforts for the imaging efficiency measures. Specifically, the TEP provided direction and feedback through all phases of project activities, including expansion of imaging efficiency measures to additional CMS quality reporting programs, updates to the current specifications of the seven imaging efficiency measures, review of quantitative testing results, feedback on qualitative testing questions (i.e., results of TEP member questionnaires), and support for endorsement of the measures by the National Quality Forum (NQF).

The following is a list of the contractor's TEP 2018-2019 members:

Brian Baker
Chief Executive Officer, Carealytics
Martha Deed, Ph.D
Patient Advocate
Elliott Fishman, MD
Professor of Radiology, Surgery, and Oncology, Johns Hopkins School of Medicine
Marian Hollingsworth
Patient Advocate
Michael Hutchinson, MD, Ph.D
Clinical Associate Professor of Neurology, Icahn School of Medicine at Mount Sinai
Gregory M. Kusiak, MBA, FRBMA
Independent Consultant
Barbara McNeil, MD, Ph.D
Head Professor of Radiology, Harvard University
Michael J. Pentecost, MD
Chief Medical Officer, NIA Magellan Healthcare
David Seidenwurm, MD
Medical Staff Consultant, Sutter Medical Group
Adam Sharp, MD, MS
Physician/Research Scientist, Kaiser Permanente Southern California
Paul R. Sierzenski, MD, RDMS, FACEP, FAAEM
Medical Director, Christiana Health Care System
Charles L.H. Staub, MD, FACP
Chairman and Primary Care Physician, ProHealth Physicians

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released: 2011

Ad.3 Month and Year of most recent revision: 03, 2019

Ad.4 What is your frequency for review/update of this measure? Annually

Ad.5 When is the next scheduled review/update for this measure? 03, 2020

Ad.6 Copyright statement: This measure does not have a copyright.

Ad.7 Disclaimers: CPT codes, descriptions, and other data only are copyright 2018 American Medical Association. All rights reserved. CPT is a registered trademark of the American Medical Association. Applicable FARS\DFARS Restrictions Apply to Government Use. Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

Ad.8 Additional Information/Comments: