NATIONAL QUALITY FORUM

Measure Submission and Evaluation Worksheet 5.0

This form contains the information submitted by measure developers/stewards, organized according to NQF's measure evaluation criteria and process. The evaluation criteria, evaluation guidance documents, and a blank online submission form are available on the submitting standards web page.

NQF #: 0513 NQF Project: Pulmonary Project

(for Endorsement Maintenance Review)
Original Endorsement Date: Oct 28, 2008 Most Recent Endorsement Date: Oct 28, 2008

BRIEF MEASURE INFORMATION

De.1 Measure Title: Thorax CT: Use of Contrast Material

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

De.2 Brief Description of Measure: This measure calculates the percentage of thorax studies that are performed with and without contrast out of all thorax studies performed (those with contrast, those without contrast, and those with both). The measure is calculated based on a one year window of Medicare claims data. The measure has been publicly reported annually by the measure steward, the Centers for Medicare & Medicaid Services since summer 2010 as a component of its Hospital Outpatient Quality Reporting (OQR) Program.

OQR is a quality data reporting program implemented by the Centers of Medicare & Medicaid Services (CMS) for outpatient hospital services. Under this program, hospitals report data using standardized measures of care to receive the full annual update to their Outpatient Prospective Payment System (OPPS) payment rate, effective for payments beginning in calendar year (CY) 2009. The Hospital OQR Program is modeled on the current quality data reporting program for inpatient services, the Hospital Inpatient Quality Reporting Program.

To meet Hospital OQR requirements and receive the full Annual Payment Update (APU) under the OPPS, hospitals must meet administrative, data collection and submission, and data validation requirements. Participating hospitals agree that they will allow CMS to publicly report data for the quality measures (as stated in the current OPPS Final Rule.) In the context of this measures reporting program, NQF #0513 is referred to as "OP-11."

Regarding interpreting this measure, a high value indicates a higher facility-level use of both a contrast and non-contrast CT Thorax studies at the same time. As indicated below in the Scientific Acceptability section, we could find no clinical guidelines or peer reviewed literature that supports so-called CT Thorax "combined studies" (i.e., CT Thorax with and without contrast).

2a1.1 Numerator Statement: The number of thorax CT studies with and without contrast (combined studies).

Sum of global and technical units associated with CPT codes:

CPT 71270 – Thorax CT With and Without Contrast

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.

Thorax CT studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.

Professional component claims will outnumber Technical component claims due to over-reads.

To capture all outpatient volume facility claims typically paid under the OPPS/APC methodology global and TC claims should be should be considered, and to avoid double counting of professional component claims (i.e., 26 modifier).

2a1.4 Denominator Statement: The number of thorax CT studies performed (with contrast, without contrast or both with and without contrast) on Medicare beneficiaries within a 12 month time window.

Sum of global and technical units for CPT codes:

71250 - Thorax Without Contrast

71260 – Thorax CT With Contrast

71270 – Thorax CT With and Without Contrast

2a1.8 Denominator Exclusions: This measure has no exclusions.

1.1 Measure Type: Efficiency
2a1. 25-26 Data Source: Administrative claims
2a1.33 Level of Analysis: Facility

1.2-1.4 Is this measure paired with another measure? No

De.3 If included in a composite, please identify the composite measure (*title and NQF number if endorsed*):
N/A

STAFF NOTES (*issues or questions regarding any criteria*)

Comments on Conditions for Consideration:

Is the measure untested? Yes☐ No☐ If untested, explain how it meets criteria for consideration for time-limited endorsement:

1a. Specific national health goal/priority identified by DHHS or NPP addressed by the measure (*check De.5*):
5. Similar/related endorsed or submitted measures (*check 5.1*):
Other Criteria:

Staff Reviewer Name(s):

1. IMPACT, OPPORTUITY, EVIDENCE - IMPORTANCE TO MEASURE AND REPORT

Importance to Measure and Report is a threshold criterion that must be met in order to recommend a measure for endorsement. All three subcriteria must be met to pass this criterion. See guidance on evidence.
Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria. (evaluation criteria)

1a. High Impact: H☐ M☐ L☐ I ☐
(*The measure directly addresses a specific national health goal/priority identified by DHHS or NPP, or some other high impact aspect of healthcare.*)

De.4 Subject/Topic Areas *(Check all the areas that apply)*: Cancer, Cardiovascular : Congestive Heart Failure, Pulmonary/Critical Care, Pulmonary/Critical Care : Asthma, Pulmonary/Critical Care : Chronic Obstructive Pulmonary Disease (COPD), Pulmonary/Critical Care : Critical Care, Pulmonary/Critical Care : Dyspnea, Pulmonary/Critical Care : Pneumonia
De.5 Cross Cutting Areas (*Check all the areas that apply)*: Overuse, Safety

1a.1 Demonstrated High Impact Aspect of Healthcare: Affects large numbers, Frequently performed procedure, High resource use, Patient/societal consequences of poor quality

1a.2 If "Other," please describe:

1a.3 Summary of Evidence of High Impact *(Provide epidemiologic or resource use data)*:
The indiscriminate use of combined Thorax CT studies defined as those that are performed both without and with contrast agents

for the evaluation of solid organs and body cavities represents a serious inefficiency of practice and a patient safety issue. The evidence base indicates that a CT Thorax scan be performed either without or with contrast but not both. The importance of the measure lies in its potential to reduce the risks of diagnostic imaging associated with unneeded radiation exposure and adverse events related to contrast agents.

Unpublished analysis of trends data provided by The Lewin Group to CMS in fall 2011 shows that of the 4,938 hospitals open in 2009, 4,449 facilities (90.1%) performed at least one CT thorax study in 2007, 2008, and 2009. Of those hospitals that had one denominator case each year, 3,424 (77%) would meet the minimum case count requirement for OP-11 Hospital Compare public reporting based on three years of measure results.

Medicare paid for approximately 1.5 million CT Thorax tests in 2009. As evidenced by the volume of denominator CT thorax studies performed, the number of CT thorax procedures decreased by about 3.8% during 2007 to 2009 (i.e., 1,558,770 to 1,500,151). With regards to the number of "combined" CT thorax studies performed, the results indicate a much more dramatic decline in CT Thorax "with and without contrast testing" of 12.3% (i.e., 85,130 in 2007 to 74,668 procedures in 2009).

These utilization statistics result in the national mean for the measure decreasing slightly between 2007-2009; in 2007, the mean was 5.5%, and by 2009, the mean was 5.0%. The measure´s upper quartile value in particular showed a negative change from 2007 to 2009 (7.6% to 6.7%, a reduction of 5.5%) contributing to a narrowing of the measure´s distribution over the three years period for which measure data is currently available.

This observed pattern of a downward trend in CT Thorax use, appears consistent with a paper presented at the 2011 Radiological Society of North America (RSNA) meeting by Sharpe et al. to determine whether the previously seen rapid growth patterns of advanced imaging in the Medicare program (CT, MRI, and nuclear medicine – NM) have changed in recent years. These researchers examined the nationwide Medicare Part B fee-for-service databases for 2000-2009 aggregating all discretionary codes for CT, MRI, and NM (including PET). Global and professional component claims were tabulated. Technical component claims were excluded to avoid double counting. Rates of use per 1000 Medicare beneficiaries in all places of service were calculated for each modality each year. Compound annual growth rates (CAGRs) were calculated for the periods 2000-06 and 2007-09 and compared.

In the Medicare population nationwide, there was rapid growth in CT, MRI, and NM utilization rates per 1000 beneficiaries from 2000 through 2006. However, from 2007 through 2009, there was dramatic curtailment of growth in CT and MRI, and the rate of use of NM actually decreased. Composite growth of all 3 modalities together after 2006 was very modest (CAGR of 1.4%). With regard to CT, the rate per 1000 rose from 325 in 2000 to 576 in 2006, then to 636 in 2009. This represents annual growth of +10.0% from 2000-06, dropping to +3.4% from 2007-09. Most of the growth in CT utilization occurred in emergency departments (EDs). Subtracting the ED rate, the CT annual growth was +8.7% from 2000-06, dropping to +1.6% from 2007-09.

There are several possible explanations for the trends including increased attention to imaging appropriateness, preauthorization programs, price sensitivity and radiation dosage concerns. We hypothesize that continued public reporting of this measure will contribute to further reducing the use of "combined" CT Thorax studies.

1a.4 Citations for Evidence of High Impact cited in 1a.3: (1) The Lewin Group. Baseline Trends in Outpatient Imaging Efficiency (OIE) Measures OP-8, OP-9, OP-10, OP-11, CY 2007 – CY 2009 Medicare Fee-for-Service Claims Data. Unpublished Final Report. Prepared for Centers for Medicare & Medicaid Services. Contract No: HHSM-500-2005-00024I / T.O. #5, October 31, 2011.

(2) R.E.Sharpe Jr, D.C. Levin, L. Parker,J.H. Sunshine, V.M. Rao. Is Growth in Advanced Imaging at an End?, presented at the Radiological Society of North America (RSNA) annual meeting, November 27, 2011. Abstract retrievable at http://rsna2011.rsna.org/pregen_pdfs/Subspecialty/12Health%20Policy.pdf

1b. Opportunity for Improvement: H☐ M☐ L☐ I ☐
(*There is a demonstrated performance gap - variability or overall less than optimal performance*)

1b.1 Briefly explain the benefits (improvements in quality) envisioned by use of this measure:
The improvements envisioned by use of this measure are reductions in exposure to radiation and contrast agents, and as described

in 1b.2 can be targeted to facilities with distinct characteristics who persistently perform CT thorax scans with and without contrast on the same day. The FDA observes that an additional CT scan is the equivalent of between 100-800 plain radiographs (see http://www.fda.gov/downloads/Radiation-EmittingProducts/RadiationSafety/RadiationDoseReduction/UCM200087.pdf)

1b.2 Summary of Data Demonstrating Performance Gap *(Variation or overall less than optimal performance across providers)*: [*For Maintenance – Descriptive statistics for performance results for this measure - distribution of scores for measured entities by quartile/decile, mean, median, SD, min, max, etc.*]
Of the 3,652 hospital outpatient facilities meeting a minimum case count for Hospital Compare public reporting in 2011, the 10% of facilities (n=365) in the 90th percentile or above on the measure performed "combined" CT studies in calendar year 2009 a minimum of 23.2% of the time. This percentage of studies performed with and without contrast is approximately 12 times the 50th percentile, 2.0%.

Further analysis of this performance gap indicates that outlier facilities are disproportionately: non-teaching, rural, small hospitals (<100 beds), located in the South Central U.S. (AR, LA, NM, OK, TX). Facilities demonstrating this performance gap also tend to be outliers on the OP-10 OQR measure: CT Abdomen, Use of contrast.

1b.3 Citations for Data on Performance Gap: [*For Maintenance – Description of the data or sample for measure results reported in 1b.2 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*]
The Lewin Group. Baseline Trends in Outpatient Imaging Efficiency (OIE) Measures OP-8, OP-9, OP-10, OP-11, CY 2007 – CY 2009 Medicare Fee-for-Service
Claims Data. Unpublished Final Report. Prepared for Centers for Medicare & Medicaid Services. Contract No: HHSM-500-2005-00024I / T.O. #5,
October 31, 2011.

1b.4 Summary of Data on Disparities by Population Group: [*For Maintenance –Descriptive statistics for performance results for this measure by population group*]
An ad hoc unpublished analysis conducted by The Lewin Group for CMS in 2011 found that in 2009, Hispanic and American Indian Medicare beneficiaries are more likely to undergo combined CT Thorax studies than white beneficiaries (p<.0001) as are males compared with females (p<.003). Consistent with the findings cited in 1.b.2, Medicare beneficiaries having a CT Thorax test who reside in the Southern U.S. are significantly more likely to have a combined study than beneficiaries receiving a CT thorax elsewhere in the country (p<.0001)

1b.5 Citations for Data on Disparities Cited in 1b.4: [*For Maintenance – Description of the data or sample for measure results reported in 1b.4 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*]
(1) The Lewin Group, Outpatient Imaging Efficiency Measures OP-8 - OP-11 Disparities Analysis, unpublished data, July 8, 2011.

1c. Evidence (*Measure focus is a health outcome OR meets the criteria for quantity, quality, consistency of the body of evidence.*)
Is the measure focus a health outcome? Yes☐ No☐ If not a health outcome, rate the body of evidence.

Quantity: H☐ M☐ L☐ I☐ Quality: H☐ M☐ L☐ I☐ Consistency: H☐ M☐ L☐ I☐

Quantity	Quality	Consistency	Does the measure pass subcriterion1c?
M-H	M-H	M-H	Yes☐
L	M-H	M	Yes☐ IF additional research unlikely to change conclusion that benefits to patients outweigh harms: otherwise No☐
M-H	L	M-H	Yes☐ IF potential benefits to patients clearly outweigh potential harms: otherwise No☐
L-M-H	L-M-H	L	No ☐

Health outcome – rationale supports relationship to at least one healthcare structure, process, intervention, or service	Does the measure pass subcriterion1c? Yes☐ IF rationale supports relationship

1c.1 Structure-Process-Outcome Relationship *(Briefly state the measure focus, e.g., health outcome, intermediate clinical outcome, process, structure; then identify the appropriate links, e.g., structure-process-health outcome; process- health outcome;*

intermediate clinical outcome-health outcome):
The measure presumes a clinically inappropriate process between conducting a CT Thorax with and without contrast and an adverse intermediate outcome (i.e., unwarranted exposure to radiation from an additional CT scan, and/or potentially harmful contrast agents).

1c.2-3 Type of Evidence *(Check all that apply)*:
Clinical Practice Guideline

1c.4 Directness of Evidence to the Specified Measure *(State the central topic, population, and outcomes addressed in the body of evidence and identify any differences from the measure focus and measure target population)*:
The review of all American College of Radiology (ACR) clinical guidelines yielded many clinical indications for appropriate use of CT Thorax studies either without or with contrast material, but not the use of combined studies. An additional review of the AHRQ Guidelines Clearinghouse regarding the use of computed tomography in the evaluation and diagnosis of symptoms and diseases in the thoracic region yielded no additional guidelines relevant to specifying measure exclusions for CT Thorax combined studies (with and without contrast material).

1c.5 Quantity of Studies in the Body of Evidence *(Total number of studies, not articles)*: The evidence base underlying the ACR Guidelines, and as documented in those Guidelines, supports clinically appropriate use of CT Thorax studies with or without contrast but indicates consistently that the very limited suggested use of combined studies is rated by ACR as "usually not appropriate."

1c.6 Quality of Body of Evidence (*Summarize the certainty or confidence in the estimates of benefits and harms to patients across studies in the body of evidence resulting from study factors. Please address: a) study design/flaws; b) directness/indirectness of the evidence to this measure (e.g., interventions, comparisons, outcomes assessed, population included in the evidence); and c) imprecision/wide confidence intervals due to few patients or events*): Across numerous guidelines and peer reviewed literature databases, we found evidence warranting CT Thorax studies, with or without contrast but not the appropriateness of combined studies.

1c.7 Consistency of Results across Studies *(Summarize the consistency of the magnitude and direction of the effect):* In particular, ACR Guidelines across multiple clinical variants rated use of combined CT Thorax studies as "usually not appropriate".

1c.8 Net Benefit *(Provide estimates of effect for benefit/outcome; identify harms addressed and estimates of effect; and net benefit - benefit over harms)*:
Based on review of clinical guidelines, the use of CT Thorax with and without contrast studies is "usually not appropriate."

1c.9 Grading of Strength/Quality of the Body of Evidence. Has the body of evidence been graded? Yes

1c.10 If body of evidence graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias: American College of Radiology within their Guidelines is now including tables where the evidence is graded to support the ACR Appropriateness Criteria.

1c.11 System Used for Grading the Body of Evidence: Other

1c.12 If other, identify and describe the grading scale with definitions: The ACR Appropriateness Criteria® are evidence-based guidelines to assist referring physicians and other providers in making the most appropriate imaging or treatment decision for a specific clinical condition. By employing these guidelines, providers enhance quality of care and contribute to the most efficacious use of radiology.

The guidelines are developed by expert panels in diagnostic imaging, interventional radiology, and radiation oncology. Each panel includes leaders in radiology and other specialties. The appropriateness rating for each procedure in the Appropriateness Criteria (AC) topics is determined by a modified Delphi method. Expert panel members review the literature and assign a rating for the appropriateness of each “usually not appropriate procedure based on their interpretation of the available evidence. If the evidence is incomplete or unavailable, expert opinion is also used. The rating scale for the imaging procedures ranges from 1-9 and is

grouped into 3 categories:
1, 2, or 3 is defined as “usually not appropriate”; 4, 5, or 6 is defined as “may be appropriate”; and 7, 8, or 9 is defined as “usually appropriate.” The ACR is now including within their Guidelines a link to an evidence table. The classification and scoring in those tables is as follows:

"Study Type Key
Numbers 1-7 are for studies of therapies while numbers 8-15 are used to describe studies of diagnostics.

1. Randomized Controlled Trial — Treatment
2. Controlled Trial
3. Observation Study
a. Cohort
b. Cross-sectional
c. Case-control
4. Clinical Series
5. Case reviews
6. Anecdotes
7. Reviews
8. Randomized Controlled Trial — Diagnostic
9. Comparative Assessment
10. Clinical Assessment
11. Quantitative Review
12. Qualitative Review
13. Descriptive Study
14. Case Report
15. Other (Described in text)

Strength of Evidence Key
• Category 1 - The conclusions of the study are valid and strongly supported by study design, analysis and results.
• Category 2 - The conclusions of the study are likely valid, but study design does not permit certainty.
• Category 3 - The conclusions of the study may be valid but the evidence supporting the conclusions is inconclusive or equivocal.

• Category 4 - The conclusions of the study may not be valid because the evidence may not be reliable given the study design or analysis.

1c.13 Grade Assigned to the Body of Evidence: Across the 21 clinical guidelines in which the clinical appropriateness of a CT thorax procedure is rated, the grade assigned to the body evidence is generally in the• Category 2 - "The conclusions of the study are likely valid, but study design does not permit certainty” or Category 3 - "The conclusions of the study may be valid but the evidence supporting the conclusions is inconclusive or equivocal" range..

1c.14 Summary of Controversy/Contradictory Evidence: 21 ACR Guidelines including 58 clinical variants were found where the appropriateness of CT Thorax studies with or without contrast were rated at least "4" (i.e., "may be appropriate" (4,5,6) or "usually appropriate" (7,8, or 9)), any use of combined studies, which were very limited, were rated "usually inappropriate."

Only two ACR Clinical Guidelines contained ratings for the use of CT Thorax with and without contrast. In each of these guidelines the expert consensus based on the body evidence indicates that a combined study is "usually not appropriate."

1c.15 Citations for Evidence other than Guidelines*(Guidelines addressed below)*:
N/A

1c.16 Quote verbatim, the specific guideline recommendation *(Including guideline # and/or page #)*:
See 1c.17 for web links to the 21 ACR Guidelines addressing the use of CT thorax studies (i.e., with, without, or with and without contrast).

1c.17 Clinical Practice Guideline Citation: 1. Acute Respiratory Illness in Immunocompetent Patients: http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/AcuteRespiratoryIllnessDoc1.aspx

2. Acute Respiratory Illness in Immunocompromised Patients

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/AcuteRespiratoryIllnessinHIVPositivePatientsDoc2.aspx

3. Chronic Dyspnea — Suspected Pulmonary Origin
http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/DyspneaDoc3.aspx

4. Hemoptysis:

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/HemoptysisDoc4.aspx

5. Non-invasive Clinical Staging of Bronchogenic Carcinoma

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/StagingofBronchogenicCarcinomaDoc11.aspx

6. Screening for Pulmonary Metastases

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/ScreeningforPulmonaryMetastasesDoc9.aspx

7. Solitary Pulmonary Nodule

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/SolitaryPulmonaryNoduleDoc10.aspx

8. Chest Pain, Suggestive of Acute Coronary Syndrome

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonCardiovascularImaging/Chest-Pain-Suggestive-of-Acute-Coronary-Syndrome.aspx

9. Follow-up of Malignant or Aggressive Musculoskeletal Tumors

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonMusculoskeletalImaging/FollowUpofMalignantorAggressiveMusculoskeletalTumorsDoc11.aspx

10. Follow-up of Renal Cell Carcinoma

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonUrologicImaging/FollowUpofRenalCellCarcinomaDoc5.aspx

11. Metastatic Bone Disease

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonMusculoskeletalImaging/Metastati

cBoneDiseaseDoc14.aspx

12. Plexopathy:

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonNeurologicImaging/PlexopathyDoc12.aspx
http://www.acr.org/acet/Plexopathy-ET.pdf (ET)

13. Pretreatment Planning of Invasive Cancer of the Cervix

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonWomensImaging/InvasiveCanceroftheCervixDoc5.aspx

14. Resectable Rectal Cancer

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonRadiationOncologyRectalAnalWorkGroup/ResectableRectalCancerUpdateinProgressDoc4.aspx

15. Soft Tissue Masses:

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonMusculoskeletalImaging/SoftTissueMassesDoc19.aspx

16. Staging and Follow-up Ovarian Cancer:

17. Staging of Testicular Malignancy

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonUrologicImaging/StagingofTesticularMalignancyDoc18.aspx

18. Dyspneal suspected cardiac origin

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonCardiovascularImaging/ShortnessofBreathSuspectedCardiacOriginDoc15.aspx

19. Chronic Chest Pain - High probability of coronoary artery disease.

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonCardiovascularImaging/ChronicChestPainNoEvidenceofMyocardialIschemiaInfarctionUpdateinProgressDoc7.aspx

20. Chronic chest pain - Low to intermediate probability of coronary artery disease.

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonCardiovascularImaging/ChronicChestPainSuspectedCardiacOriginUpdateinProgressDoc8.aspx

21. Suspected Infective Endocarditis

http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonCardiovascularImaging/SuspectedBacterialEndocarditisDoc17.aspx

1c.18 National Guideline Clearinghouse or other URL: http://www.acr.org/ac

1c.19 Grading of Strength of Guideline Recommendation. Has the recommendation been graded? Yes

1c.20 If guideline recommendation graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias: .For a comprehensive description of the American College of Radiology´s structure and process for guideline review and development see http://www.acr.org/SecondaryMainMenuCategories/quality_safety/guidelines.aspx

1c.21 System Used for Grading the Strength of Guideline Recommendation: Other

1c.22 If other, identify and describe the grading scale with definitions: As noted the body evidence presented to support ACR ratings of clinical guidelines associated with CT Thorax studies did not reveal any compelling evidence to support "combined" studies.

1c.23 Grade Assigned to the Recommendation: Grades assigned to clinical variants across 21 clinical guidelines where CT Thorax with or without contrast is indicated vary in the range of "may be appropriate" to "usually appropriate". For these 58 clinical variants, there is not one instance where CT Thorax with and without contrast falls in this grade range, i The body of evidence to support these consensus-driven guidelines are Category 2 - The conclusions of the study are likely valid, but study design does not permit certainty or Category 3 - The conclusions of the study may be valid but the evidence supporting the conclusions is inconclusive or equivocal..

1c.24 Rationale for Using this Guideline Over Others: ACR synthesis across numerous clinical conditions indicating appropriate use of CT Thorax without contrast or with contrast, but not combined studies I.e., with and without contrast).

Based on the NQF descriptions for rating the evidence, what was the developer's assessment of the quantity, quality, and consistency of the body of evidence?
1c.25 Quantity: Moderate 1c.26 Quality: Moderate1c.27 Consistency: Moderate

Was the threshold criterion, *Importance to Measure and Report*, met?
(*1a & 1b must be rated moderate or high and 1c yes*) Yes☐ No☐
Provide rationale based on specific subcriteria:

For a new measure if the Committee votes NO, then STOP.
For a measure undergoing endorsement maintenance, if the Committee votes NO because of 1b. (no opportunity for improvement), it may be considered for continued endorsement and all criteria need to be evaluated.

2. RELIABILITY & 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. (evaluation criteria)
Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate field. Supplemental materials may be referenced or attached in item 2.1. See guidance on measure testing.

S.1 Measure Web Page *(In the future, NQF will require measure stewards to provide a URL link to a web page where current detailed specifications can be obtained*). Do you have a web page where current detailed specifications for this measure can be obtained? Yes

S.2 If yes, provide web page URL:
http://qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1228695266120

2a. RELIABILITY. Precise Specifications and Reliability Testing: H☐ M☐ L☐ I ☐

2a1. Precise Measure Specifications. (*The measure specifications precise and unambiguous.*)

2a1.1 Numerator Statement *(Brief, narrative description of the measure focus or what is being measured about the target population, e.g., cases from the target population with the target process, condition, event, or outcome)*:
The number of thorax CT studies with and without contrast (combined studies).

Sum of global and technical units associated with CPT codes:

CPT 71270 – Thorax CT With and Without Contrast

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.

Thorax CT studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.

Professional component claims will outnumber Technical component claims due to over-reads.

To capture all outpatient volume facility claims typically paid under the OPPS/APC methodology global and TC claims should be should be considered, and to avoid double counting of professional component claims (i.e., 26 modifier).

2a1.2 Numerator Time Window *(The time period in which the target process, condition, event, or outcome is eligible for inclusion)*:
CT Thorax with and without contrast (a "combined study") occurring on the same day within a 12 month time window.

2a1.3 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, codes with descriptors, and/or specific data collection items/responses*:
71270 – Thorax CT With and Without Contrast

2a1.4 Denominator Statement *(Brief, narrative description of the target population being measured)*:
The number of thorax CT studies performed (with contrast, without contrast or both with and without contrast) on Medicare beneficiaries within a 12 month time window.

Sum of global and technical units for CPT codes:

71250 - Thorax Without Contrast

71260 – Thorax CT With Contrast

71270 – Thorax CT With and Without Contrast

2a1.5 Target Population Category *(Check all the populations for which the measure is specified and tested if any)*: Adult/Elderly Care

2a1.6 Denominator Time Window *(The time period in which cases are eligible for inclusion)*:
12 months

2a1.7 Denominator Details (*All information required to identify and calculate the target population/denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*:
71250 - Thorax Without Contrast
71260 – Thorax CT With Contrast
71270 – Thorax CT With and Without Contrast

2a1.8 Denominator Exclusions *(Brief narrative description of exclusions from the target population)*:
This measure has no exclusions.

2a1.9 Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*:
N/A

2a1.10 Stratification Details/Variables *(All information required to stratify the measure results including the stratification variables, codes with descriptors, definitions, and/or specific data collection items/responses)*:

N/A

2a1.11 Risk Adjustment Type *(Select type. Provide specifications for risk stratification in 2a1.10 and for statistical model in 2a1.13)*: No risk adjustment or risk stratification 2a1.12 If "Other," please describe:

2a1.13 Statistical Risk Model and Variables *(Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development should be addressed in 2b4.)*:
N/A

2a1.14-16 Detailed Risk Model Available at Web page URL (or attachment). Include coefficients, equations, codes with descriptors, definitions, and/or specific data collection items/responses. Attach documents only if they are not available on a webpage and keep attached file to 5 MB or less. NQF strongly prefers you make documents available at a Web page URL. Please supply login/password if needed:

2a1.17-18. Type of Score:

2a1.19 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

2a1.20 Calculation Algorithm/Measure Logic*(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; aggregating data; risk adjustment; etc.)*:
OP-11 measure calculates the percentage of thorax studies that are performed with and without contrast out of all thorax studies performed (those with contrast, those without contrast, and those with both). The measure is calculated based on a one year window of hospital outpatient claims data as follows:

1. Selects hospital outpatient claims with a CPT code for any thorax CT (71250 – Thorax Without Contrast, 71260 – Thorax CT With Contrast, or 71270 – Thorax CT With and Without Contrast) on a revenue line item.
2. Exclude professional component only claims with modifier='26'
3. Set denominator counter=1
4. Set numerator counter=1 if CPT code = 71270 thorax CT studies with and without contrast (combined studies).
5. Summarize denominator and numerator counters by Medicare provider number
6. Measure = numerator counts / denominator counts

2a1.21-23 Calculation Algorithm/Measure Logic Diagram URL or attachment:
Attachment
ALGORITHM CT THORAX NQF 514.pdf

2a1.24 Sampling (Survey) Methodology. If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate):
N/A

2a1.25 Data Source *(Check all the sources for which the measure is specified and tested*). If other, please describe:
Administrative claims

2a1.26 Data Source/Data Collection Instrument (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.*): Fee-for-service Medicare hospital outpatient and Part B Standard Analytic Files.

2a1.27-29 Data Source/data Collection Instrument Reference Web Page URL or Attachment: URL

http://www.resdac.org/ddvh/index.asp

2a1.30-32 Data Dictionary/Code Table Web Page URL or Attachment:
URL
http://www.resdac.org/ddvh/index.asp
N/A

2a1.33 Level of Analysis (*Check the levels of analysis for which the measure is specified and tested)*: Facility

2a1.34-35 Care Setting *(Check all the settings for which the measure is specified and tested)*: Hospital/Acute Care Facility

2a2. Reliability Testing. (*Reliability testing was conducted with appropriate method, scope, and adequate demonstration of reliability*.)

2a2.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
Results are not based on a sample, but on 100% of fee for service Medicare claims data. In February-March 2010, CMS conducted a dry run of four outpatient imaging efficiency measures including OP-11: Thorax CT Use of Contrast.

The goals of the dry run were to (1) educate hospitals about outpatient imaging efficiency measures; (2) test the CMS measure production process; and, (3) give hospitals an opportunity to provide CMS with their feedback on the measures. All hospitals with any outpatient hospital department claims data for the measure were included in the dry run analyses.

The measure´s dry run constituted reliability testing as it demonstrated that data elements supported by Medicare claims data were accurate across the entities being measured and helped establish measure-specific precision estimates (i.e., minimum case counts).

2a2.2 Analytic Method *(Describe method of reliability testing & rationale)*:
To assess reliability during the dry run, CMS sent to hospitals their hospital specific report and related patient level data via the secured exchange of the QualityNet website. Hospitals were then able to compare numerator and denominator results with their internal diagnostic imaging utilization statistics, and for patients who received "combined" scans, patient records.

2a2.3 Testing Results *(Reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:
The dry run included 3354 hospitals that downloaded at least their hospital specific reports and 3060 hospitals that downloaded at least their patient level data, with 3007 hospitals downloading both. During the dry run process, 540 emails were submitted containing a total of 583 questions and/or comments about the four imaging efficiency measures. Regarding the CT Thorax measure, only 12 comments were received (i.e., 2% of all comments).

From these findings, and the subsequent low level of inquiries about the technical specification of this measure, CMS infers that Medicare claims data has provided reliable results about the measure´s numerator and denominator values for the over 3000 hospitals participating in Hospital Compare.

2b. VALIDITY. Validity, Testing, including all Threats to Validity: H☐ M☐ L☐ I ☐

2b1.1 Describe how the measure specifications *(measure focus, target population, and exclusions)* are consistent with the evidence cited in support of the measure focus (*criterion 1c)* and identify any differences from the evidence:
The measure specifications follow the ACR Appropriateness Criteria which consistently indicate a lack of appropriate use for a combined CT thorax study, and thus serve to establish strong consensus-driven construct validity for the measure.

2b2. Validity Testing. (*Validity testing was conducted with appropriate method, scope, and adequate demonstration of validity.)*

2b2.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
There is no sampling; 100% Medicare fee for service claims support the measure´s calculation. The measure was originally developed and pilot tested in 2007 with a focus on Medicare eligible persons receiving CT Thorax procedures in hospital outpatient associated facilities. There are no exclusions for this measure that necessitated identifying and/or classifying patients with

distinguishing diagnoses that would warrant routine appropriate use of a "combined" CT Thorax study. The focus of this measure has remained unchanged since CMS proposed its inclusion in the Hospital Outpatient Quality Reporting Program in 2009, with public reporting commencing in summer 2010.

2b2.2 Analytic Method *(Describe method of validity testing and rationale; if face validity, describe systematic assessment)*:
To date, based on claims analysis, face validity is evident for the measure as indicated by: (1) two years of Hospital Compare public reporting, a systematic and transparent process; (2) ongoing surveillance of the measure by CMS Imaging Efficiency Measures Technical Expert Panel; and public recognition (discussed in the Usability Section below) that performance scores resulting from the measure as specified can be used to distinguish good from poor quality (e.g., based on 2009 Medicare claims data, while 1700 facilities report performing CT Thorax with and without contrast less than 2% of the time, there are approximately 900 facilities reporting "combined" studies at least 7% of the time, and 365 facilities with 23% or more of their CT Thorax studies with and without contrast.

2b2.3 Testing Results *(Statistical results, assessment of adequacy in the context of norms for the test conducted; if face validity, describe results of systematic assessment)*:
Face validity. As noted above, the measure´s specification derives from a synthesis of ratings from a broad array of clinical conditions associated with the appropriate use of CT Thorax studies. Moreover, initial measure testing was conducted to look for consistencies in measure calculations between geographic locations (i.e., urban, rural, state) and hospital characteristics (i.e., teaching status, bed size).

POTENTIAL THREATS TO VALIDITY. (*All potential threats to validity were appropriately tested with adequate results.*)

2b3. Measure Exclusions. (*Exclusions were supported by the clinical evidence in 1c or appropriately tested with results demonstrating the need to specify them.*)

2b3.1 Data/Sample for analysis of exclusions *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
Results are not based on a statistical sample but on 100% of occurrences. There are no exclusions.

2b3.2 Analytic Method (*Describe type of analysis and rationale for examining exclusions, including exclusion related to patient preference)*:
N/A

2b3.3 Results *(Provide statistical results for analysis of exclusions, e.g., frequency, variability, sensitivity analyses):*
N/A

2b4. Risk Adjustment Strategy. (*For outcome measures, adjustment for differences in case mix (severity) across measured entities was appropriately tested with adequate results.*)

2b4.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
Data is not based on a sample.

2b4.2 Analytic Method (*Describe methods and rationale for development and testing of risk model or risk stratification including selection of factors/variables)*:
Risk adjustment was determined not to be necessary as guidelines did not indicate further need for case mix adjustments.

2b4.3 Testing Results *(Statistical risk model: Provide quantitative assessment of relative contribution of model risk factors; risk model performance metrics including cross-validation discrimination and calibration statistics, calibration curve and risk decile plot, and assessment of adequacy in the context of norms for risk models. Risk stratification: Provide quantitative assessment of relationship of risk factors to the outcome and differences in outcomes among the strata)*:
N/A

2b4.4 If outcome or resource use measure is not risk adjusted, provide rationale and analyses to justify lack of adjustment: Risk adjustment was determined not to be necessary as guidelines did not indicate further need for case mix adjustments.

2b5. Identification of Meaningful Differences in Performance. (*The performance measure scores were appropriately analyzed and discriminated meaningful differences in quality.*)

2b5.1 Data/Sample *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
Results are not based on sample data. In 2009, Medicare beneficiaries experienced 1.52 million CT Thorax procedures in hospital outpatient settings. 3,652 facilities met this measure´s minimum case count requirement for 2011 Hospital Compare public reporting.

2b5.2 Analytic Method *(Describe methods and rationale to identify statistically significant and practically/meaningfully differences in performance)*:
Descriptive analysis of Medicare claims data based on hospital outpatient facilities meeting a minimum case count criterion. For a description of CMS´ minimum case count methodology for outpatient imaging efficiency measures including this measure, see https://www.cms.gov/HospitalQualityInits/Downloads/HospitalOutpatientImagingEfficiencyMinimumCaseCounts.pdf

2b5.3 Results *(Provide measure performance results/scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)*:
Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful differences in performance as follows:

Facilities: 3,652
25th percentile: .005
Median: .020
75th percentile: .071
90th percentile: .232
95th percentile: .400

Thus, 913 facilities performed less than 1 "combined" CT Thorax studies per 100 CT Thorax procedures, while 365 facilities performed 23 such studies per 100 CT Thorax procedures.

2b6. Comparability of Multiple Data Sources/Methods. (*If specified for more than one data source, the various approaches result in comparable scores.*)

2b6.1 Data/Sample *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
No sampling. The measure relies on 100% fee for service Medicare claims. Multiple sources of data are not used.

2b6.2 Analytic Method *(Describe methods and rationale for testing comparability of scores produced by the different data sources specified in the measure)*:
N/A

2b6.3 Testing Results *(Provide statistical results, e.g., correlation statistics, comparison of rankings; assessment of adequacy in the context of norms for the test conducted)*:
N/A

2c. Disparities in Care: H☐ M☐ L☐ I☐ NA☐ (*If applicable, the measure specifications allow identification of disparities.*)

2c.1 If measure is stratified for disparities, provide stratified results *(Scores by stratified categories/cohorts)*: Measure is not stratified for disparities.

2c.2 If disparities have been reported/identified (e.g., in 1b), but measure is not specified to detect disparities, please explain:
An ad hoc unpublished analysis conducted by The Lewin Group for CMS in 2011 using 2009 Medicare claims data found that Hispanic and American Indian Medicare beneficiaries are more likely to undergo combined CT Thorax studies than white beneficiaries (p<.0001) as are males compared with females (p<.003). Consistent with the findings cited in 1.b.2, Medicare beneficiaries having a CT Thorax test who reside in the Southern U.S. are significantly more likely to have a combined study than

beneficiaries receiving a CT thorax elsewhere in the country (p<.0001)

2.1-2.3 Supplemental Testing Methodology Information:
URL
http://www.hopgdrponline.com/media/CMS-OIE-DryRunHSR-MockReport-Final-v1-500766(checked).pdf

Steering Committee: Overall, was the criterion, *Scientific Acceptability of Measure Properties*, met?
(*Reliability and Validity must be rated moderate or high*) Yes☐ No☐
Provide rationale based on specific subcriteria:

If the Committee votes No, STOP

3. USABILITY

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (evaluation criteria)

C.1 Intended Purpose/ Use *(Check all the purposes and/or uses for which the measure is intended)*: Public Reporting, Quality Improvement (Internal to the specific organization)

3.1 Current Use *(Check all that apply; for any that are checked, provide the specific program information in the following questions)*: Public Reporting, Payment Program

3a. Usefulness for Public Reporting: H☐ M☐ L☐ I ☐
(*The measure is meaningful, understandable and useful for public reporting.*)

3a.1. Use in Public Reporting - disclosure of performance results to the public at large *(If used in a public reporting program, provide name of program(s), locations, Web page URL(s)).* If not publicly reported in a national or community program, state the reason AND plans to achieve public reporting, potential reporting programs or commitments, and timeline, e.g., within 3 years of endorsement: [*For Maintenance – If not publicly reported, describe progress made toward achieving disclosure of performance results to the public at large and expected date for public reporting; provide rationale why continued endorsement should be considered.*]
Medicare Hospital Outpatient Quality Reporting Program.
http://www.hospitalcompare.hhs.gov/(S(fb4sl2zg5ggahlaxy3fdoi55))/staticpages/for-professionals/outpatient-imaging-efficiency-measures.aspx

3a.2.Provide a rationale for why the measure performance results are meaningful, understandable, and useful for public reporting. If usefulness was demonstrated (e.g., focus group, cognitive testing), describe the data, method, and results: On June 17 and 18, 2011 articles appeared in The New York Times and The Washington Post entitled respectively, "Medicare Claims Show Overuse for CT Scanning" and "Many Hospitals Overuse Double CT Scans Data Show". These articles, prepared and vetted with the collaboration of the measure steward, focused on highlighting measure gaps, while offering hypotheses to explain these results. Within three days of publication, these articles generated 292 comments from NY Times and 63 comments from Washington Post readers.
To review these articles, and their implications for measure usability, please see:
http://www.nytimes.com/2011/06/18/health/18radiation.html?_r=1

http://www.washingtonpost.com/national/health-science/many-hospitals-overuse-double-ct-scans-data-shows/2011/06/16/AGvpTAaH_story.html

3.2 Use for other Accountability Functions (payment, certification, accreditation). If used in a public accountability program, provide name of program(s), locations, Web page URL(s): (1) Section 135(a) of the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) amended section 1834(e) of the Social Security Act and required the Secretary to designate organizations to accredit suppliers, including but not limited to physicians, non-physician practitioners and Independent Diagnostic Testing Facilities, that furnish the technical component (TC) of advanced diagnostic imaging services.

MIPPA specifically defines advanced diagnostic imaging procedures as including diagnostic magnetic resonance imaging (MRI), computed tomography (CT), and nuclear medicine imaging such as positron emission tomography (PET).In order to furnish the TC of advanced diagnostic imaging services for Medicare beneficiaries, suppliers must be accredited by January 1, 2012. It is possible that implementation of these accreditation requirements will have a salutary impact on reducing inappropriate CT procedures such as "combined" CT Thorax scans.

(2)Driven by the Health Information Technology for Economic and Clinical Health (HITECH) Act, the Department of Health and Human Services requested that NQF convert, or "retool," 113 NQF-endorsed quality measures from a paper-based format to an electronic "eMeasure" format. CT Thorax, use of contrast is one of these re-tooled measures, and will be considered for inclusion in CMS´ electronic health record Stage II Meaningful Use measures reporting system.

3b. Usefulness for Quality Improvement: H☐ M☐ L☐ I ☐
(*The measure is meaningful, understandable and useful for quality improvement.*)

3b.1. Use in QI. If used in quality improvement program, provide name of program(s), locations, Web page URL(s):
[*For Maintenance – If not used for QI, indicate the reasons and describe progress toward using performance results for improvement*].
In 2012, CMS has asked The Lewin Group to prepare a quality improvement strategy plan based on further analysis of the measure, and its trends. Of special interest is identifying the root cause for the persistence of hospital outlier performance, and to suggest quality improvement approaches to remedy such results.

3b.2. Provide rationale for why the measure performance results are meaningful, understandable, and useful for quality improvement. If usefulness was demonstrated *(e.g., QI initiative),* describe the data, method and results:
The public reporting of the measure which engendered media coverage such as that described in 3b1 provide a catalyst for hospital outpatient facilities and their affiliated radiologists to take voluntary action to reduce, and functionally eliminate the use of CT thorax with and without contrast.

Overall, to what extent was the criterion, *Usability*, met? H☐ M☐ L☐ I ☐
Provide rationale based on specific subcriteria:

4. FEASIBILITY

Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)

4a. Data Generated as a Byproduct of Care Processes: H☐ M☐ L☐ I ☐

4a.1-2 How are the data elements needed to compute measure scores generated? *(Check all that apply).*
Data used in the measure are:
Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)

4b. Electronic Sources: H☐ M☐ L☐ I ☐

4b.1 Are the data elements needed for the measure as specified available electronically *(Elements that are needed to compute measure scores are in defined, computer-readable fields)*: ALL data elements in electronic claims

4b.2 If ALL data elements are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources:

4c. Susceptibility to Inaccuracies, Errors, or Unintended Consequences: H☐ M☐ L☐ I ☐

4c.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measurement identified during testing and/or operational use and strategies to prevent, minimize, or detect. If audited, provide results:
None observed to date. There are no exclusions to this measure which might complicate its calculation or introduce measurement error. Unique procedural codes exist for CT thorax without, with, and with and without contrast that mitigate the potential for coding errors.

4d. Data Collection Strategy/Implementation: H☐ M☐ L☐ I ☐

A.2 Please check if either of the following apply (*regarding proprietary measures*):
4d.1 Describe what you have learned/modified 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 *(e.g., fees for use of proprietary measures)*:
This measure is subjected to an annual review of CPT coding updates to assure that numerator and denominator codes are current. Otherwise, no other feasibility concerns have surfaced in assembling, and analyzing Medicare claims data to support valid and reliable public reporting of the measure.

Overall, to what extent was the criterion, *Feasibility*, met? H☐ M☐ L☐ I ☐
Provide rationale based on specific subcriteria:

OVERALL SUITABILITY FOR ENDORSEMENT

Does the measure meet all the NQF criteria for endorsement? Yes☐ No☐
Rationale:

If the Committee votes No, STOP.
If the Committee votes Yes, the final recommendation is contingent on comparison to related and competing measures.

5. COMPARISON TO RELATED AND 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 before a final recommendation is made.

5.1 If there are related measures *(either same measure focus or target population)* or competing measures *(both the same measure focus and same target population*), list the NQF # and title of all related and/or competing measures:

5a. Harmonization

5a.1 If this measure has EITHER the same measure focus OR the same target population as NQF-endorsed measure(s): Are the measure specifications completely harmonized?

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

5b. Competing Measure(s)

5b.1 If this measure has 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)*:

CONTACT INFORMATION

Co.1 Measure Steward (Intellectual Property Owner): Centers for Medicare & Medicaid Services, 7500 Security Boulevard , Mail Stop S3-02-01, Baltimore, Maryland, 21244-1850

Co.2 Point of Contact: Susan, Arday, MHS (Chronic Disease Epidemiology, Johns Hopkins University, susan.arday@cms.hhs.gov, 410-786-3141-

Co.3 Measure Developer if different from Measure Steward: The Lewin Group, 3130 Fairview Park Drive. Suite 500, Falls Church, Virginia, 22042

Co.4 Point of Contact: Alan, Friedlob, PhD, alan.friedlob@lewin.com, 703-269-5505-

Co.5 Submitter: Alan, Friedlob, PhD, alan.friedlob@lewin.com, 703-269-5505-, The Lewin Group

Co.6 Additional organizations that sponsored/participated in measure development:
The following consultants have participated in measure maintenance since the measure was initially endorsed:

(1) Michael J. Pentecost, M.D
Associate Chief Medical Officer

Thomas Dehn, M.D., F.A.C.P
Chief Medical Officer

Staci Barnett, MS

National Imaging Associates/Magellan
Columbia, Maryland

(2) Joan E. DaVanzo, Ph.D., M.S.W.
CEO
Dobson DaVanzo Health Care Consulting
Vienna, Virginia

Co.7 Public Contact: Susan, Arday, MHS (Chronic Disease Epidemiology, Johns Hopkins University, susan.arday@cms.hhs.gov, 410-786-3141-, Centers for Medicare & Medicaid Services

ADDITIONAL INFORMATION

Workgroup/Expert Panel involved in measure development
Ad.1 Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.
The following 2010-2011 TEP members advised on the measure´s technical specifications:

Augustine E. Agocha, MD, PhD, MBA
Chief of Division of Cardiovascular Medicine
Department of Internal Medicine
University of South Carolina

John Eng, MD, FACR
Associate Professor of Radiology
Johns Hopkins School of Medicine

Elliott Fishman, MD
Professor, Radiology and Oncology
Director, Diagnostic Imaging and Body CT
Johns Hopkins School of

Michael Hutchinson, MD, PhD
Associate Professor of Neurology
Diplomate, Neuroimaging
Diplomate, American Board of Psychiatry and Neurology
New York University School of Medicine

Gregory M. Kusiak, MBA
President
California Medical Business Services, Inc.

Barbara McNeil, MD, PhD
Ridley Watts Professor and Head
Professor of Radiology
Department of Health Care Policy
Harvard University

Jean Mitchell, PhD
Professor of Public Policy
Georgetown Public Policy Institute

Paul R. Sierzenski, MD, RDMS FACP
Director, Emergency, Trauma and Critical Care Ultrasound
Director, Emergency Ultrasound Fellowship
Department of Emergency Medicine
Christiana Care Health System
Associate Professor, Emergency Medicine
Thomas Jefferson University

Ad.2 If adapted, provide title of original measure, NQF # if endorsed, and measure steward. Briefly describe the reasons for adapting the original measure and any work with the original measure steward: N/A

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.3 Year the measure was first released: 2009
Ad.4 Month and Year of most recent revision: 12, 2011
Ad.5 What is your frequency for review/update of this measure? annually
Ad.6 When is the next scheduled review/update for this measure? 12, 2012

Ad.7 Copyright statement:

Ad.8 Disclaimers:

Ad.9 Additional Information/Comments:

Date of Submission (*MM/DD/YY*): 10/18/2011

ALGORITHM (SAS PROGRAM) TO CALCULATE NQF #514: CT THORAX, USE OF CONTRAST

Program:

```
//Z27TTH10 JOB (BLTBLT31300),'IMG(SUB)',
//      NOTIFY=Z27T,
//      MSGCLASS=Q,
//      CLASS=H
//GRAB EXEC SAS9
//WORK DD DSN=&&SASDISK,
//     DISP=(NEW,PASS,DELETE),
//     SPACE=(CYL,(999,999),RLSE)
//OP10 DD DSN=K2FH.@BLT3130.IMG.OP.TRAN10,DISP=SHR
//MYOUT DD DSN=Z27T.@BLT3130.OUTLIST2,
//     DISP=OLD
//SYSIN DD *
OPTIONS MPRINT DKRICOND=WARN DKROCOND=WARN SYMBOLGEN OBS=MAX;

 /*************************************************************
 * QMS -
 *      PROJECT: CMS IMAGING
 *      PURPOSE: CMS IMAGING - MEASURE SET 1: THORAX CT 100%
 *      USE VERSION J OUTPUT DATA
 *       AUTHOR: DAVID ZHANG
 * INITIAL DATE: 07/28/2011
 *       REMARK: USING 2010 OUTPATIENT CLAIMS
 *************************************************************/

DATA THORAX; SET OP10.OP_LINE_LEVEL;
ARRAY MD{5}     MODIFIER1-MODIFIER5;

LENGTH KEY $ 30;
SUBSTR(KEY,1,9)=CAN;
SUBSTR(KEY,10,2)=EQ_BIC;
SUBSTR(KEY,12,6)=PROVIDER;
SUBSTR(KEY,18,8)=REV_DATE;
SUBSTR(KEY,26,5)=CPT;

IF CPT='71250' OR CPT='71260' OR CPT='71270';

* DELETE MODIFIER PROFESSIONAL;

MD_PROF=0;
MD_OTHER=0;
```

```
DO I=1 TO 5;
IF MD{I}='26' THEN MD_PROF=1;
ELSE IF MD{I} GT '  ' THEN MD_OTHER=1;
END;
IF MD_PROF=1 AND MD_OTHER=0 THEN DELETE;
KEEP KEY PRPAID UNIT PROVIDER CPT REV_CD DGNSCD01-DGNSCD10;

PROC SORT; BY KEY;

DATA CASE; SET THORAX; BY KEY; IF FIRST.KEY;
DEN=1; NUM=0;
IF CPT='71270' THEN NUM=1;
PROC SORT; BY PROVIDER;
PROC MEANS SUM NOPRINT; BY PROVIDER; VAR DEN NUM;
OUTPUT OUT=TOT SUM=DEN NUM;

DATA ALL; SET TOT;
FILE MYOUT;
PUT @1 PROVIDER $6.  (DEN NUM) (10.);
/*
```