



NQF
NATIONAL QUALITY FORUM



**OUTPATIENT
IMAGING
EFFICIENCY**



National Voluntary Consensus Standards for Outpatient Imaging Efficiency

A CONSENSUS REPORT

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National Voluntary Consensus Standards for Outpatient Imaging Efficiency: A Consensus Report

Foreword

THE QUALITY AND SAFETY of outpatient imaging services are critically important, yet few national standards exist to address the variations in the delivery of services, define the quality of outpatient imaging care, or allow its measurement. In addition, the cost of outpatient imaging studies is approximately \$14 billion annually for Medicare beneficiaries. Thus, it is critical that we clarify which imaging procedures and technology result in improvements in patient care and contribute to better patient outcomes.

The National Quality Forum (NQF) previously endorsed three measures of appropriate use of imaging for low back pain and two measures for use of imaging for patients with stroke. NQF also has launched a project to further address the appropriate and efficient use of diagnostic imaging in the outpatient setting among healthcare providers.

Building on these efforts, this report presents eight NQF-endorsed[®] consensus standards for public accountability and quality improvement related to the appropriateness and efficiency of outpatient imaging at the practitioner and facility levels. Also included are a number of research and measure development recommendations regarding the appropriateness and efficiency of outpatient imaging services.

We wish to thank the members of the Outpatient Imaging Efficiency Steering Committee and NQF Members for their important work that will help reduce excessive healthcare costs and improve patient care.



Janet M. Corrigan, PhD, MBA
President and Chief Executive Officer

The mission of the National Quality Forum is to improve the quality of American healthcare by setting national priorities and goals for performance improvement, endorsing national consensus standards for measuring and publicly reporting on performance, and promoting the attainment of national goals through education and outreach programs.

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National Voluntary Consensus Standards for Outpatient Imaging Efficiency: A Consensus Report

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National Voluntary Consensus Standards for Outpatient Imaging Efficiency: A Consensus Report

Executive Summary

OUTPATIENT IMAGING IS a common and frequently performed component of health-care delivery, with important applications in diagnosing disease, establishing prognosis, and monitoring therapy. Although the quality and safety of outpatient imaging services are critically important, few national standards exist to address the variations in the delivery of services, define the quality of outpatient imaging care, or allow its measurement. In addition, because the cost of outpatient imaging studies is approximately \$14 billion annually for Medicare beneficiaries, it is critical to ensure that there is value for this investment. Defining measurable value indicators such as appropriate utilization, excellence in technical performance by certified or credentialed personnel, timeliness in study reporting, and clinical efficacy is essential to this process. It is imperative to clarify which imaging procedures and technology result in improvements in patient care and possible decreases in healthcare costs.

In 2007, the National Quality Forum (NQF) took the first step in standardizing measures to address the appropriateness of diagnostic imaging services with the endorsement of five voluntary consensus standards, including three measures of appropriate use of imaging for low back pain and two measures for use of imaging for patients with stroke. In April 2008, NQF launched a project to further address appropriate and efficient use of diagnostic imaging in the outpatient setting among healthcare providers, including measures that specifically relate to the appropriateness and efficiency of imaging services, including both the quality and cost of imaging services. This NQF project sought to identify and endorse measures for public accountability and quality improvement related to the appropriateness and efficiency of outpatient imaging at the practitioner and facility levels. These measures will particularly examine the significant clinical, systems, and care coordination aspects involved in the efficient delivery of high-quality services and thereby effectively improve the care of patients and reduce excessive healthcare costs. This report presents eight NQF-endorsed[®] consensus standards and a number of research and measure development recommendations regarding the appropriateness and efficiency of outpatient imaging services.

National Voluntary Consensus Standards for Outpatient Imaging Efficiency

- Stenosis measurement in carotid imaging studies
- Inappropriate use of “probably benign” assessment category in mammography screening
- Reminder system for mammograms
- Exposure time reported for procedures using fluoroscopy
- Correlation with existing imaging studies for all patients undergoing bone scintigraphy
- Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication
- Use of contrast: thorax CT
- MRI lumbar spine for low back pain

National Voluntary Consensus Standards for Outpatient Imaging Efficiency: A Consensus Report

Background

OUTPATIENT IMAGING IS a common and frequently performed component of health-care delivery, with important applications in diagnosing disease, establishing prognosis, and monitoring therapy. Accordingly, the quality and safety of outpatient imaging services are critically important. However, few national standards exist to address the variations in the delivery of services, define the quality of outpatient imaging care, or allow its measurement. In addition, because the cost of outpatient imaging studies is approximately \$14 billion annually for Medicare beneficiaries,¹ it is critical to ensure that this investment has value. Defining measurable value indicators such as appropriate utilization, excellence in technical performance by certified or credentialed personnel, timeliness in study reporting, and clinical efficacy is essential to this process. It is imperative to clarify which imaging procedures and technology result in improvements in patient care and possible decreases in healthcare costs. The goal of these consensus standards is to promote the appropriate use of imaging services, avoid redundancy and unnecessary exposure to radiation, reduce the use of painful and wasteful follow-up procedures, and ensure that patients get the right healthcare service the first time. These strategies have the potential to improve both the quality and affordability of healthcare.

Healthcare spending has continued to increase rapidly, but it is not clear whether the increased spending is associated with increasing the value of the care delivered.² Efficiency is one of the Institute of Medicine's (IOM's) six domains of quality, although the definition of "efficiency" is variable. IOM defines efficiency as "avoiding waste, including waste of equipment, supplies, ideas, and energy."³ The AQA definition is that "efficiency of care is a measure of cost of care associated with a specified level of quality of care. 'Efficiency of care' is a measure of the relationship of the cost of care associated with a specific level of performance measured with respect to the other five IOM aims of quality."⁴ The U.S. Government Accountability Office defines efficiency as "providing and ordering a level of services that is sufficient to meet patients' health care needs, but not excessive, given a patient's health status."⁵ The Medicare Payment Advisory Commission defines efficiency as "using fewer inputs to get the same or better outcomes. Efficiency combines concepts of resource use and quality."⁶ The NQF Measurement Frameworkⁱ adopted the AQA definition

ⁱ See www.qualityforum.org/pdf/projects/priorities/NQFFramework%20COMMENT%2006Nov07.pdf.

for efficiency and further emphasized that the purpose of the healthcare delivery system is “to improve health, reduce the burden of illness, and maximize the value of individual and societal resources allocated to health care.” For this project, the NQF Outpatient Imaging Efficiency Steering Committee used a broad, comprehensive definition of efficiency to ensure the balance of quality and cost. The level of quality of imaging services may be affected by a series of important considerations, including patient selection for the diagnostic imaging study, the delivery of the imaging service, the interpretation of the image, and the ultimate impact of the imaging study on patient outcomes.

In 2007, the National Quality Forum (NQF) undertook the first steps in standardizing measures for diagnostic imaging services with the endorsement of five voluntary consensus standards, including three measures of appropriate use of imaging for low back pain and two measures for use of imaging for patients with stroke. In April 2008, NQF launched a project to further address the appropriate and efficient use of diagnostic imaging in the outpatient setting, encompassing measures that specifically relate to the appropriateness and efficiency of imaging services, including both the quality and cost of imaging services. This NQF project sought to identify and endorse measures for public accountability and quality improvement related to the appropriateness and efficiency of outpatient imaging at the clinicianⁱⁱ and facilityⁱⁱⁱ level. These measures should address

the significant clinical, systems, and care coordination aspects (particularly between the ordering and the imaging clinician) involved in the efficient delivery of high-quality services and thereby effectively improve the care of patients and reduce excessive healthcare costs. This report presents eight NQF-endorsed[®] consensus standards and a number of research and measure development recommendations regarding the appropriateness and efficiency of outpatient imaging services. (See Appendix A for the measure specifications).

Strategic Directions for NQF

As NQF nears completion of its first decade, consideration of strategic issues to guide current and future activities has resulted in an expansion of NQF’s mission to include three parts: 1) setting national priorities and goals for performance improvement; 2) endorsing national consensus standards for measuring and publicly reporting on performance; and 3) promoting the attainment of national goals through education and outreach programs. As greater numbers of quality measures are developed and brought to NQF for consideration, NQF must assist stakeholders in measuring “what makes a difference” and addressing what is important to achieve the best outcomes for patients and populations. An updated Measurement Framework, reviewed by NQF Members in December 2007, promotes shared accountability and measurement across episodes of care with a focus on outcomes and patient

ⁱⁱ Clinician-level measures are suitable for individual clinician- or group practice-level accountability.

ⁱⁱⁱ Facility-level measures are suitable for any licensed healthcare facility that provides outpatient imaging services.

engagement in decisionmaking coupled with measures of the healthcare process and cost/resource use. For more information, see www.qualityforum.org.

Several strategic issues have been identified to guide the consideration of candidate consensus standards:

DRIVE TOWARD HIGH PERFORMANCE. Over time, the bar of performance expectations should be raised to encourage the achievement of higher levels of system performance.

EMPHASIZE COMPOSITE MEASURES. Composite measures provide much-needed summary information pertaining to multiple dimensions of performance and are more comprehensible to patients and consumers.

MOVE TOWARD OUTCOME MEASUREMENT. Outcome measures provide information of keen interest to consumers and purchasers, and, when coupled with healthcare process measures, they provide useful and actionable information to providers. Outcome measures also focus attention on much-needed system-level improvements, because achieving the best patient outcomes often requires carefully designed care processes, teamwork, and coordinated action on the part of many providers.

FOCUS ON DISPARITIES IN ALL THAT WE DO. Some of the greatest performance gaps relate to care of minority populations. Particular attention should be focused on the most relevant race/ethnicity/language/socioeconomic strata to identify relevant measures for reporting.

NQF's Consensus Development Process

Evaluating Potential Consensus Standards

Candidate standards were solicited through an open Call for Measures in April 2008 and searched through the National Quality Measures Clearinghouse. A total of 21 measures were identified and evaluated by the Outpatient Imaging Efficiency Steering Committee for appropriateness as voluntary consensus standards for accountability and public reporting. The Steering Committee evaluated the candidate consensus standards using its standard criteria of importance, scientific acceptability, usability, and feasibility. See www.qualityforum.org/about/leadership/measure_evaluation.asp.

Relationship to Other NQF-Endorsed Consensus Standards

This report does not represent the entire scope of NQF work relevant to the quality of care for outpatient imaging efficiency. See Appendix B for other NQF measures that are relevant to this area of care. The full constellation of consensus standards, along with those presented in this report, provide a growing number of NQF-endorsed voluntary consensus standards that directly and indirectly reflect the importance of measuring and improving quality of care.

Organizations that adopt these consensus standards will promote the development of safer and higher-quality care for patients throughout the nation.

National Voluntary Consensus Standards for Outpatient Imaging Efficiency

This report presents eight performance measures (see Table 1) in the following areas:

- appropriateness of imaging, including measures that address potential overuse of certain imaging studies and appropriateness of referrals for imaging;
- efficient use and management of imaging diagnostic services (e.g., x-ray, magnetic resonance imaging, tomography, mammography);
- coordination of care and communication (including health information technology) among all providers/departments regarding a diagnostic imaging service, including the appropriateness of the study and timely follow-up of abnormal results;
- measures sensitive to the needs of vulnerable populations, including racial/ethnic minorities and Medicaid patients; and
- measures suitable for clinician- and facility-level analysis.

All NQF-endorsed measures are fully open source (see www.qualityforum.org) and are intended for use at the clinician and/or facility level of analysis (e.g., outpatient imaging department, freestanding imaging centers), as indicated for each measure in the following sections of this report. Implementing organizations should decide the rules of attribution, sample size requirements, and statistical significance based on the characteristics and goals of the measurement program.

Table 1: National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE ID ^a	MEASURE DESCRIPTION AND REVIEW NUMBER ^b	LEVEL OF ANALYSIS	IP OWNER(S) ^c
Stenosis measurement in carotid imaging studies*	0507	Goal: Uniform reporting of carotid stenosis measurement regardless of imaging modality. Percentage of final reports for carotid imaging studies (neck magnetic resonance [MR] angiography [MRA], neck computed tomography [CT] angiography [CTA], neck duplex ultrasound, carotid angiogram) performed that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement (OIE-003-08)	Clinician	ACR AMA PCPI NCQA
Inappropriate use of “probably benign” assessment category in mammography screening*	0508	Goal: To reduce the inappropriate use of the “probably benign” category in screening mammograms. Percentage of final reports for screening mammograms that are classified as “probably benign” (OIE-005-08)	Clinician	ACR AMA PCPI NCQA

more

*Time-limited endorsement.

^a Upon NQF endorsement, each measure receives a unique NQF measure ID number.

^b Review number.

^c Intellectual property owner(s). For the most current specifications and supporting information, please refer to the IP owner:

ACR - American College of Radiology (www.acr.org)

AMA PCPI - American Medical Association Physician Consortium for Performance Improvement (www.ama-assn.org/ama/pub/physician-resources/clinical-practices-improvement/clinical-quality/physician-consortium-performance-improvement.shtml)

CMS - Centers for Medicare & Medicaid Services (www.cms.gov)

Harborview Medical Center (<http://uwmedicine.washington.edu/Facilities/Harborview>)

NCQA - National Committee for Quality Assurance (www.ncqa.org)

SNM - Society of Nuclear Medicine (www.snm.org)

Table 1: National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE ID ^a	MEASURE DESCRIPTION AND REVIEW NUMBER ^b	LEVEL OF ANALYSIS	IP OWNER(S) ^c
Reminder system for mammograms*	0509	<p>Goal: To reduce breast cancer mortality through the effective, periodic use of screening mammograms through the utilization of a reminder system.</p> <p>Percentage of patients aged 40 years and older undergoing a screening mammogram whose information is entered into a reminder system with a target due date for the next mammogram (OIE-008-08)</p>	Clinician	ACR AMA PCPI NCQA
Exposure time reported for procedures using fluoroscopy*	0510	<p>Goal: To reduce overall radiation exposure to the patient and increase awareness of radiation exposure.</p> <p>Percentage of final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time (OIE-009-08)</p>	Clinician	ACR AMA PCPI NCQA
Correlation with existing imaging studies for all patients undergoing bone scintigraphy*	0511	<p>Goal: To increase the incorporation of all available imaging information into the nuclear imaging report.</p> <p>Percentage of final reports for all patients, regardless of age, undergoing bone scintigraphy that include physician documentation of correlation with existing relevant imaging studies (e.g., x-ray, MRI, CT) that were performed (OIE-010-08)</p>	Clinician	SNM AMA PCPI NCQA

more

Table 1: National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE ID ^a	MEASURE DESCRIPTION AND REVIEW NUMBER ^b	LEVEL OF ANALYSIS	IP OWNER(S) ^c
Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication	0512	<p>Goal: To reduce the unnecessary use of cervical spine radiographs in extremely low-risk patients.</p> <p>Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication (OIE-012-08)</p>	Clinician or facility	Harborview Medical Center
Use of contrast: thorax CT	0513	<p>Goal: Minimize use of with contrast followed by a noncontrast thorax CT scan.</p> <p>Thorax CT – Use of combined studies (with and without contrast) - Estimate the ratio of combined (with and without) studies to total studies performed (OIE-019-08)</p>	Facility	CMS
MRI lumbar spine for low back pain	0514	Percentage of people who had an MRI of the lumbar spine with a diagnosis of low back pain without claims based on evidence of antecedent conservative therapy (OIE-020-08)	Facility	CMS

Endorsed Measures

0507^{iv} **Stenosis measurement in carotid imaging studies**

(ACR/AMA PCPI/NCQA) 01E-003-08^v

This clinician-level measure assesses whether reports from several types of imaging studies of the carotid artery report include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement. Evidence suggests that the performance of carotid ultrasound and the interpretation of ultrasound results vary considerably across laboratories and that interpretive criteria for carotid stenosis are either indiscriminately applied or the interpreters are uncertain about exactly how to make the diagnosis of carotid stenosis.⁷ Additionally, research has highlighted the need for standardization in characterizing the degree of stenosis.⁸ The Steering Committee agreed that the measure examined an important aspect of care and is supported by clinical evidence. However, the Committee acknowledged that there is a lack of evidence to determine a significant difference between the methodologies of the North American Symptomatic Carotid Endarterectomy Trial and the European Carotid Surgery Trial.⁹ The Committee questioned whether this new measure would now encompass or replace the previously endorsed measure Carotid Imaging

Reports (NQF# 0245) from the same measure developer that focuses on carotid imaging for patients with a diagnosis of ischemic stroke or transient ischemic attacks.^{vi} The measure developer will consider combining these measures in the near future.

In an effort to standardize interpretability, the Steering Committee recommended that the measure developer exclude studies not performed for stenosis and clarify the appropriate carotid imaging studies included in the measure. During the follow-up conference call, the measure developer noted that although there may be instances when MR angiography or neck CT angiography studies are performed for reasons other than to evaluate a possible stenosis, the ACR/AMA PCPI/NCQA Radiology Work Group did not believe they would occur frequently enough to warrant the addition of a medical reason exclusion for this measure. It was further noted that if a radiologist were to evaluate a carotid imaging study in which the caliber of the carotid artery is not of clinical concern, the physician could report that the stenosis was normal and still satisfy the requirements of the measure. The intent of the measure is to standardize the characterization of the degree of stenosis, consistent with evidence in the medical literature and related guidelines. It is believed that the documented wide variation in the use of methods for stenosis calculation leads to variation in the appropriateness of carotid intervention and consequently to overuse, underuse, or misuse of these

^{iv} NQF measure ID number.

^v Review number.

^{vi} Endorsed in May 2007 as part of the *National Voluntary Consensus Standards for Hospital Care: Specialty Clinician Performance Measures*.

procedures. The measure developer concluded that providing an option for physicians to exclude patients would only dilute the measure's intent and may lead to unintended consequences (i.e., the inappropriate use of the medical reason exclusion to improve performance rates). The Steering Committee accepted the measure developer's response. During the follow-up conference call, the Committee recommended that the measure developer explicitly account for the use of flow velocity when a duplex ultrasound is conducted as a valid method to assess stenosis. The Radiology Work Group reviewed the Steering Committee's request and modified the definition of "Direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement," with specific attention to the parenthetical statement referring to duplex ultrasound studies. The modification, provided below, is intended to further clarify the intent of the Work Group in developing the measure, as derived from evidence-based clinical practice guidelines. Stenosis measurements with duplex ultrasound are almost always, and should be, based on velocity criteria rather than anatomic measurements. The issue addressed by the measure is with what those hemodynamic velocity measurements are correlated. Original criteria recommended that these correlations with angiographic measurements be based on bulb diameter. The measure is aimed at encouraging the correlation with the *current angiographic* definition (i.e., distal internal carotid lumen):

"Direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement" includes direct angiographic stenosis

calculation based on the distal lumen as the denominator for stenosis measurement OR an equivalent validated method referenced to the above method (e.g., for duplex ultrasound studies, velocity parameters that *correlate* with anatomic measurements that use the distal internal carotid lumen as the denominator for stenosis measurement).

The Steering Committee accepted the measure developer's revision of the definition.

0508 **Inappropriate use of "probably benign" assessment category in mammography screening**

(ACR/AMA PCPI/NCQA) OIE-005-08

This measure assesses the inappropriate use of "probably benign" terminology in imaging reports. Evidence suggests that although the mammogram assessment category of "probably benign" is not recommended for use in interpreting screening mammograms, it is associated with up to 11 percent of all screening mammograms and accounts for more than 40 percent to 50 percent of abnormal screening mammograms.¹⁰ The ACR *Breast Imaging Reporting and Data System Atlas* recommends *against* using this probably benign categorization, referred to as BI-RADS® category 3, in interpreting screening examinations.¹¹ Additionally, studies emphasize the need to conduct a complete diagnostic imaging evaluation before making a probably benign (BI-RADS category 3) assessment; therefore, it is inadvisable to render such an assessment when interpreting a screening examination.¹²

The Committee agreed that this measure addresses a very important aspect of

mammography care and is both useable and feasible. The Committee noted that although the measure would likely be effective in examining overuse of BI-RADS category 3, which should be associated with a low risk of malignancy (less than 2 percent), there is a small group of appropriate cases that merit this classification. The Committee recommended that the measure developer clarify that the measure is intended for screening mammography and consider modifications that allow for the very small number of patients who could be appropriately categorized as BI-RADS category 3 and explicitly state that the performance rate is not expected to be 100 percent. During the follow-up conference call, the measure developer affirmed that the measure is limited to screening mammograms. This is clearly stated in the measure's title and denominator statements and specified by the list of coding options for denominator inclusion. The ACR/AMA PCPI/NCQA Radiology Work Group did not believe the rare occurrence when a probably benign assessment category might be appropriate in screening mammography warranted the addition of a medical exclusion for this measure. Explicit statements in the ACR guidelines and BI-RADS documentation recommend against the use of BI-RADS category 3 in screening mammography. The measure intends to discourage this well-documented inappropriate use of the probably benign assessment category. Allowing for physicians to exclude the very rare subset of patients for whom the assessment category is appropriate would only dilute the measure's intent and may lead to unintended consequences (i.e., the inappropriate use of the medical reason exclusion to improve performance

rates). It was further noted that revising the measure's instructions per the Steering Committee's recommendation to modify the measure to allow for rationale to include patients appropriately diagnosed as BI-RADS category 3 with a performance target approaching zero percent allows for slight variability with respect to reporting the probably benign assessment category and the rare appropriate use of the code. To address the Steering Committee's final recommendation to explicitly state that the performance rate is not expected to be 100 percent, the measure instructions have been revised as follows:

For performance, a lower percentage, with a definitional target approaching 0%, indicates appropriate assessment of screening mammograms (e.g., the proportion of screening mammograms that are classified as "probably benign").

The Steering Committee accepted the measure developer's response and clarification.

0509 **Reminder system for mammograms**

(ACR/AMA PCPI/NCQA) *OIE-008-08*

This clinician-level measure evaluates the use of automated reminder systems for routine follow-up for mammography screening. Evidence suggests that among women ages 40 years and older there is a decreasing trend in screening rates.¹³ The use of patient reminders is associated with an increase in screening mammography and is currently recommended from the results of a systematic review of studies conducted by the Task Force on Community Preventive Services.¹⁴ That a

reminder system will increase mammography rates is supported by the evidence. The *National Healthcare Disparities Report* has shown that disparities exist in the proportion of women receiving mammograms by race, ethnicity, and education.¹⁵ The Steering Committee noted the importance of examining the periodicity of notification, which will ensure that screening continues appropriately over time.

The Committee believed that the measure also would be very useful in evaluating an imaging facility. In addition, the Committee recognized the potential difficulty in implementing this measure. Some facilities may have difficulty disseminating reminders without a radiology module that could automatically generate notifications. Monitoring when reminders should be issued may be burdensome as well. Additionally, it was noted that implementation may increase medicolegal issues related to tracking notification. Some patients may not schedule an appointment until they receive notification. Another concern discussed was that some patients may be difficult to contact. The Steering Committee ultimately approved the measure based on the importance of the measure and the evidence that patient-directed reminder systems are effective for this purpose.

0510 Exposure time reported for procedures using fluoroscopy

(ACR/AMA PCPI/NCQA) *OIE-009-08*

This clinician-level measure evaluates the documentation of radiation exposure or radiation time during fluoroscopy. Data suggest that the

lifetime risk for cancer can be increased, albeit by a small amount, with frequent or repeated exposure to ionizing radiation, including procedures using fluoroscopy.¹⁶ In order to monitor these long-term effects, the exposure time or radiation dose that a patient receives as a result of the procedure should be measured and recorded in the patient's record. ACR encourages practices to record actual fluoroscopy time for all fluoroscopic procedures. The fluoroscopy time for various procedures (e.g., upper gastrointestinal, pediatric voiding cystourethrography) should then be compared with benchmark figures.¹⁷ The National Cancer Institute also recommends measuring and recording patient radiation dose: record fluoroscopy time and record available measures—dose area product, cumulative dose, and skin dose.¹⁸ The Steering Committee members agreed that variation in exposure time exists. It was noted that implementing this measure will ensure that exposure time is both measured and documented. The Committee recognized that implementation may be difficult depending on the number of reporting systems necessary to capture the data elements. The Steering Committee believed the measure would also be appropriate at the facility level of analysis.

0511 Correlation with existing imaging studies for all patients undergoing bone scintigraphy

(SNM/AMA PCPI/NCQA) *OIE-010-08*

This clinician-level measure assesses whether there is physician documentation of correlation with existing relevant imaging studies (e.g., x-ray, MRI, CT) that were performed for patients undergoing bone scintigraphy. Literature

suggests as many as 30 percent of radiology reports contain errors, regardless of the imaging modality, radiologist experience, or time spent in interpretation.¹⁹ Additionally, because the specificity of bone scan abnormalities can be low because of many other conditions that may mimic tumor, it is important that radionuclide bone scans are correlated with available, relevant imaging studies. SNM recommends that bone scintigraphic abnormalities be correlated with appropriate physical examination and imaging studies to ascertain that osseous or soft-tissue abnormalities, which might cause cord or other nerve compression or pathologic fracture in an extremity, are not present.²⁰ The Committee believed that the measure addresses an important clinical area and that correlation is necessary to examine radiograph and bone scintigraphy. A noted strength was that the measure will encourage efforts to obtain prior studies in order to perform correlation. Evidence exists that an increase in the number of reports where correlation is performed leads to better quality.

As specified, the Committee commented that the measure could be easily gamed (e.g., providers may check “not available,” which would trigger an exclusion). Some Committee members commented that variation in nuclear medicine providers’ ability to interpret MRI and CT studies may create difficulty in implementing this measure. The Steering Committee questioned whether “all or at least one” existing relevant imaging study must be documented. The Committee also thought that the measure should take into account patients for whom there is no existing relevant study (e.g., patients who traveled a great distance). The Committee recommended that the measure developer

consider the measure at the facility level of analysis and eliminate exclusions or specify definition of “not available.” The SNM/AMA PCPI Nuclear Medicine Work Group responded that until there are data on the testing of this measure at the facility level, the measure should be recommended for endorsement at the clinician level only. In the future, the measure developer will evaluate this measure as well as other AMA PCPI measures for consideration at the facility level. The Steering Committee accepted this response.

The SNM/AMA PCPI Nuclear Medicine Work Group also responded that the system reason for exclusion should remain in this measure. The intent of this measure is to encourage correlation with existing imaging studies; however, expert clinicians in the field confirmed that existing studies frequently are not available. For example, patients often visit multiple institutions for studies, especially when they are referred for advanced therapy. Given the variability in accessing a patient’s existing imaging studies, the SNM/AMA PCPI Nuclear Medicine Work Group recommended that the system exclusion not be removed from the measure to allow for accurate capture of those instances in which a study is not available. The Work Group thought that this would help to inform the quality improvement gaps that may exist between providers and also to support the notion that it would be unfair to penalize clinicians for not being able to obtain a previous study, if efforts were made to do so. The measure developer noted that the potential for inappropriate use of exclusions to improve performance rates is a legitimate concern. However, for all AMA PCPI measure exclusions, clinicians are required to document the clinical

justification for the exclusion in the medical record. Any questionable exclusion rates are thus auditable and transparent because the exclusion rates as well as performance rates are provided. During the testing phase of the measure, the measure developer will collect data on the incidence of exclusions in clinical practice. This information will help to inform any future modifications that may be made to the measure. The Committee agreed with the measure developer's rationale for maintaining the exclusion, "study is not available." However, the Committee recommended that the measure developers define what constitutes "unavailable" or incorporate an explicit method of validating that an existing study was in fact unavailable. The Work Group provided additional definition of "unavailable," and the denominator exclusions were revised as follows:

System reason for not documenting correlation with existing relevant imaging studies in final report (e.g., no existing relevant imaging study available,* patient did not have a previous relevant imaging study).

**Correlative studies are considered to be unavailable if relevant studies (reports and/or actual examination material) from other imaging modalities exist but could not be obtained after reasonable efforts to retrieve the studies are made by the interpreting physician prior to the finalization of the bone scintigraphy report.*

The Steering Committee accepted the revisions.

0512 Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication

(Harborview Medical Center) OIE-012-08

This measure evaluates the appropriate use of x-rays for the cervical spine at the individual, clinician, or facility level. The American Academy of Family Physicians recommends that patients who meet certain criteria do not require radiographs to rule out cervical fractures: no neck pain or tenderness, no neurologic signs or symptoms, no loss of consciousness, normal mental status, and no distracting injury.²¹ The Steering Committee noted that the measure addresses an important aspect of care and is supported by a strong evidence base (e.g., the National Emergency X-Radiography Utilization Study and the Canadian Cervical Spine Rule Study.²² An additional strength noted was that the measure follows ACR appropriateness criteria.²³

During the NQF Member and public comment period, the measure developer made specific revisions to improve the measure. The following modifications were suggested:

- In conformance with ACR guidelines, the measure developer proposed allowing the use of either the NEXUS Low-Risk criteria (NLC) or the Canadian C-Spine (CCS) rule criteria. Although both rules have a strong evidence base and are widely accepted, there is debate about which rule is best. The Steering Committee and measure developer agreed that the measure should not mandate

the use of one rule over the other, but rather should allow individual sites to choose between them.

- Although there is no age restriction for patients in the NLC criteria, the CCS rule excludes patients >65 years of age, because of their higher risk of fractures—approximately double that of the general population. Therefore, if the two rules could be applied, to allay concerns about using the NEXUS criteria in the “elderly,” the measure developer suggested setting an age restriction of <65 years for this measure. Additionally, the NLC criteria included patients <16 years of age. However, there were relatively few fractures in those <9 years of age, which limited the power of the study. The CCS rule excluded patients <16 years of age. Consequently, the Steering Committee and measure developer agreed to set the age range from 16 to 65 years.

0513 **Use of contrast: thorax CT** (CMS) OIE-019-08

This measure assesses the use of CT scans of the thorax “with and without contrast.” The intent of this measure is to assess the appropriate use of CT scans that carry significant radiation exposure, an element of risk from contrast agent reaction, and significantly increased examination costs.²⁴ Specifically, this measure evaluates the use of “combined” studies in which a CT scan without contrast is performed *and* a CT scan with contrast is also performed. Apparently, some facilities have interdepartmental or facility protocols that call for use of “combined” studies in nearly all cases. Steering Committee members agreed with the measure developer that for a CT scan of the thorax, the imaging clinician should evaluate

the indication(s) for the CT scan and either perform the study “with contrast” or “without contrast” as appropriate—it is unusual to need both studies to obtain the required diagnostic information. Data from the measure developer suggest high variation across providers in out-patient settings and among geographic regions, indicating an opportunity for improvement. The average use of combined studies across specialty physicians’ offices is 8.3 percent. The Steering Committee noted that there may be a mistaken sense that “more information is better”; that significant radiation exposure to the patient with double dose may not be adequately appreciated; and that there is increased reimbursement for “combined” studies. The Steering Committee strongly agreed that there is clear indication of when to perform thorax CT with or without contrast material. As a result of the NQF Member and public comment period, the measure developer also clarified that the measure is limited only to the imaging facility and does not include clinician-level analysis for radiologists.

0514 **MRI lumbar spine for low back pain** (CMS) OIE-020-08

This measure assesses the percentage of people who had an MRI of the lumbar spine for a diagnosis of low back pain without claims evidence of antecedent conservative therapy. Lumbar MRI is an appropriate study to evaluate patients with low back pain accompanied by a measurable neurological deficit in the lower extremity(s) *unresponsive* to conservative management. The use of lumbar MRI for low back pain (excluding operative, acute

injury, or tumor patients) is not typically indicated unless the patient has received a period of conservative therapy and significant symptoms persist. According to the measure developer, a lumbar MRI claim for low back pain without the presence of prior Evaluation and Management codes (E&M codes) or claims suggesting conservative therapy (which would include physical therapy, the administration of injectable analgesic care, or chiropractic evaluation and manipulative treatment within specified periods), could indicate that the MRI was likely obtained on the first visit without a trial of conservative therapy. The Steering Committee agreed that this measure should encourage less inappropriate MRI use for patients with low back pain. Data from the measure developer using Medicare claims indicate that the rate of potentially inappropriate MRIs for low back pain across all facility types is 21.8 percent.

The Committee also discussed whether lower back pain with sciatica should be excluded and recommended that the measure developer exclude red flag ICD-9 codes, as well as consider additional forms of antecedent therapy (e.g., over-the-counter [OTC] medication). The measure has been revised to exclude patients with cancer, recent trauma, recent intravenous drug abuse, and recent neurologic impairment. The measure developer noted that the use of OTC medication cannot be determined through administrative (claims) data and therefore is not feasible. The Committee accepted the rationale for not including OTC medications.

NQF previously endorsed a similar measure, NQF# 0052 - Appropriate Imaging for Acute Back Pain (NCQA): "The percentage of

patients with a diagnosis of back pain for whom the physician ordered imaging studies during the six weeks after pain onset, in the absence of 'red flags'" (overuse measure, lower performance is better), which uses six weeks' time rather than claims for services to establish the antecedent conservative therapy. The Committee recommended harmonizing the exclusions of this candidate standard, and the measure developer agreed to include the same red-flag conditions and specific ICD-9 codes related to the red-flag conditions. By excluding patients with red-flag indicators in a manner consistent with the NCQA measure and by limiting the data collection to administrative data (claims), the measure is harmonized with the currently endorsed NCQA measure. During the follow-up call, the Steering Committee noted the need to account for situations where antecedent therapy cannot be identified through administrative claims (e.g., self-administered antecedent therapy, patients who do not have care four to six weeks from date of onset of symptoms to date of MRI). The comment period also generated feasibility concerns regarding the ability of the imaging facility to access information regarding whether antecedent conservative therapy was provided prior to referral for an MRI. In order to collect this information, the Committee recommended the development of a CPT-II code.

As a result of the NQF Member and public comment period, the Steering Committee also recommended that "injectable analgesics" be removed from the list of appropriate antecedent conservative therapy preceding MRI because an epidural injection, a type of injectable analgesic, necessitates an MRI prior

to the procedure. The measure developer also clarified that the measure is limited only to the imaging facility and does not include clinician-level analysis for radiologists.

Measures Not Endorsed

CT RADIATION DOSE REDUCTION

(ACR/AMA PCPI/NCQA) *OIE-001-08*

Efforts to reduce patients' exposure to radiation represent an important safety concern. The Steering Committee noted that the measure addresses an important area of quality and safety that could be applied to all patients with broad applicability across specialties. However, the Steering Committee believed that it would be more important to capture the radiation dose given, rather than rely on a provider assessment that a "low dose" was administered. There were concerns that a provider could state that a low dose was given, but that there is no method of validation, given the current scanner technology in routine use. The Steering Committee discussed the importance of capturing the exact radiation dose and establishing a method to verify techniques for appropriate moderation of exposure. The Committee encouraged manufacturers to develop scanners with automated modulation and capture of the exact radiation dose. The Steering Committee also stated the need for more research to identify appropriate population-specific dosages, particularly for pediatric patients.

INAPPROPRIATE INDICATIONS FOR KNEE ARTHROSCOPY WITH MENISCECTOMY

(AAAHC Institute for Quality Improvement) *OIE-002-08*

According to the measure developer, the intent of the measure is to help physicians focus on the patient's history and the physical exam with regard to diagnosis and use the imaging when appropriate and not solely for diagnostic purposes. The Steering Committee noted that the measure is based on a good concept and addresses an important aspect of care. However, the Committee thought that the measure specifications were unclear and did not achieve the measure's intent. The Committee members agreed that the salient issues are the proper indications for an MRI and whether an MRI is needed before surgery. The Committee recommended further development of the measure to address patient acuity and the time course expected for evaluation. Given concerns with overuse, clinical guidelines are needed on the appropriate indications for a knee MRI.

MAMMOGRAPHY ASSESSMENT CATEGORY DATA COLLECTION (ACR/AMA PCPI/NCQA) *OIE-004-08*

This measure evaluates whether a clinician has a system for collecting data on mammography and follow-up. According to the measure developer, the intent of the measure is to encourage physicians to collect the data necessary to track the recall rate and, at least, set a minimum for internal quality improvement efforts. There are data that show that the recall rate for almost half of radiologists is higher than the less than 10 percent recommended by ACR, and higher recall rates suggest that unnecessary additional imaging or biopsies are being performed. Some Steering Committee members believed that this was a measure of data collection rather than of quality.

The Steering Committee considered the measure to be weak because it is only about data collection and provides no vital or actionable information other than the fact that mammography centers are tracking abnormalities. The Committee suggested that measure implementation may lead to unintentional consequences (e.g., encouraging recalls that may increase false-positive results). It was noted that the measure may have a negative impact on access to mammography because of liability, reimbursement, and patient satisfaction issues related to recall. Additionally, the Committee commented that a quality gap may not exist, because many institutions are approaching 100 percent performance.

COMMUNICATION OF SUSPICIOUS FINDINGS FROM THE DIAGNOSTIC MAMMOGRAM TO THE PRACTICE MANAGING ONGOING CARE (ACR/AMA PCPI/NCQA) OIE-006-08

COMMUNICATION OF SUSPICIOUS FINDINGS FROM THE DIAGNOSTIC MAMMOGRAM TO THE PATIENT (ACR/AMA PCPI/NCQA) OIE-007-08

Evidence exists that early detection of suspicious findings leads to improved outcomes. The Steering Committee agreed that communication with the ordering practice and the patient were important. However, the Committee had concerns with the identification of the accountable provider who could acknowledge receipt of the results and the form of documentation required. This situation may be further complicated because the clinician who ordered the study may not always be the clinician responsible for the patient's care. The Committee also discussed the need to contact the practice managing the

patient's ongoing care before notifying the patient. Overall, there was concern that these measures may place undue burden on imaging centers without clear benefit. There was also a question of providing immediate results to patients while they are onsite for the study, but current evidence suggests that batch reading, rather than immediate reads of mammograms and related studies, is preferred. The Committee suggested that these measures be harmonized with other requirements for critical results communication (e.g., The Joint Commission). The Steering Committee strongly encouraged the standardization of critical results reporting to patients and ordering providers to ensure timely and accurate communication of patient information.

COMMUNICATION TO REFERRING PHYSICIAN OF PATIENT'S POTENTIAL RISK FOR FRACTURE FOR ALL PATIENTS UNDERGOING BONE SCINTIGRAPHY (SNM/AMA PCPI/NCQA) OIE-011-08

This measure assesses whether communication to the referring clinician occurs within 24 hours when findings on a bone scan suggest a significant risk for fracture. The Steering Committee agreed that communication is important, but thought that there should be a more global approach to reporting "critical results" for all studies. The Steering Committee strongly recommended to the measure developers that they work on a broad measure for reporting critical results, rather than on multiple, narrow measures for various imaging studies.

PERCENTAGE OF PATIENTS UNDERGOING CT PULMONARY ANGIOGRAPHY (CTPA) WHO HAVE A MODIFIED WELLS SCORE OF ≤ 4 . CT SHOULD BE PERFORMED IN LESS THAN 3% OF PATIENTS WITH A MODIFIED WELLS SCORE OF ≤ 4

(Harborview Medical Center) *OIE-013-08*

This measure assesses the appropriate indications for CTPA as it relates to risk assessment for pulmonary embolism (PE). Steering Committee members noted that there are other reasons to perform a CTPA besides evaluation for PE for which a risk assessment for PE (Wells score and D-dimer) is not meaningful. The Steering Committee strongly agreed that this measure lacks scientific evidence to support the specifications that CT scans should be performed in <3 percent of patients with a modified Wells score of ≤ 4 and is not the standard of care. Additionally, the combination of a modified Wells Score and D-dimer to identify fatal and nonfatal thromboembolism has not been validated. The Committee also noted multiple weaknesses in the measure specifications (i.e., does not specify the type of D-dimer, does not allow for exclusion of patients for whom CTPA is not performed, and does not take into account predisposition based on genetics). The Committee encouraged the measure developer to continue the development of a validated measure on this topic.

CODE STROKE CT NEUROIMAGING IN EVALUATING PATIENTS WITH ACUTE STROKE SYMPTOMS

(Intersocietal Accreditation Commission [IAC]) *OIE-014-08*

This measure assesses a facility's performance of CT scans within the urgent timeframe required for thrombolytic therapy for acute stroke. The Steering Committee agreed that this measure examines an important aspect of care,

particularly system functionality of the hospital or emergency department in providing care in a timely manner, rather than the performance of a specific provider. The measure developer agreed that the measure should not apply to a specific provider and removed this designation. The measure specifications exclude patients who may not meet the measure's 45-minute time window but have indications for CT scan and may benefit from CT scan. The Committee did not want to discourage CT scans in patients who are outside of the time window. The Committee asked the developer to clarify at what point the 45-minute time limit begins. The measure developer noted that the time of arrival to the facility would be the start of this measure and that a written preliminary report of the CT head should be sent to the treating physician within 45 minutes of the patient's arrival at the facility. Alternatively, a direct verbal report to the treating physician can be provided within 45 minutes of the patient's arrival at the facility with a follow-up written preliminary report documenting the time of this verbal report exchange. A goal of reading the CT head within 15 minutes of the completion of the study is recommended. If the interpreting physician and treating physician are the same, a preliminary written report should be noted within the medical record. The written preliminary report should include comments on major CT head findings (at a minimum, presence or absence of hemorrhage, mass lesion, or acute infarction must be mentioned) and should indicate whether the study fulfills neuroimaging criteria for the inclusion or exclusion of acute stroke therapies based on available published neuroimaging guidelines.

Although the Committee believed this was a good measure of the efficiency of the emergency department and imaging centers in general, it had concerns about the specifics. The Committee found the measure to be burdensome because of the need for chart abstraction to obtain the time of presentation in the emergency department, the time the report is sent back to the attending physician, and the time treatment is initiated in the emergency department. The Committee suggested sampling to increase the feasibility of data collection. Some Committee members thought that the specifications lacked clarity, particularly the definition of the terms “acute stroke” and “arrival.” This primarily points to time at triage, which may not be a good reference point for the 45-minute window because patients may be in the waiting room for a significant period before they are signed in to the emergency department. Additionally, Steering Committee members asked about when the 45-minute timeframe begins and the relationship to the onset of acute stroke symptoms.

Some Steering Committee members questioned the feasibility of providing a verbal report to the treating physician within 45 minutes. Because some conditions evolve and stroke conditions arise, it may not be adequate to initiate a timing component upon emergency department arrival. It was also noted that many patients (85 percent to 90 percent) will not meet the three-hour window based on National Institute of Neurological Disorders and Stroke criteria. The Committee recommended the removal of “code stroke” because of vagueness and suggested clarifying the group of patients that this measure specifically addresses. The Committee believed that the measure should be

limited to “patients presenting with acute stroke to the emergency department within three hours of onset of symptoms.” “Arrival” should be defined as the “time when patients arrive in the ED presenting with and identified with those symptoms.”

The measure developer revised the measure such that acute stroke patients are defined as:

identified in the prehospital or facility triage setting with symptom onset within three hours for facilities not having emergent access to intracranial endovascular therapies. Additionally, healthcare facilities that identify themselves as comprehensive stroke center capable specifically regarding endovascular interventions such as intra-arterial thrombolytics, clot retrieval techniques or stenting performed emergently, should have these criteria apply in stroke patients identified in the prehospital or facility triage setting who are being evaluated for these procedures beyond three hours of symptom onset in addition to those patients with symptom onset within three hours.²⁵

Patients not fulfilling these criteria would be excluded from the measure, although CT studies may still be medically appropriate in patients with focal neurological symptoms beyond three hours of onset. The Steering Committee disagreed with the measure developer’s revised definition of acute stroke. The revised measure stated that patients who arrive beyond three hours of onset would receive a CT scan. The Committee noted that this is in conflict with recommended guidelines. The Committee believed that the measure should be limited to patients who arrive within three hours of onset. To that end, the Steering Committee did not recommend this measure.

X-RAY PRIOR TO MRI OR CAT SCAN IN THE EVALUATION OF LOWER BACK PAIN

(Health Benchmarks, Inc.) *OIE-015-08*

Although there are concerns regarding the potential overuse of MRI/CT scanning for low back pain, the Steering Committee did not believe that the measure would provide valuable information and that it could lead to unintentional consequences (i.e., increased utilization of plain x-rays for low back pain).

The Committee had numerous concerns with the measure specifications. The definition of persistent neurologic deficit was not clearly specified, and as specified, many of the diagnoses noted in the exclusions are identified by an MRI or CT. The Committee was also concerned that plain x-rays may not provide clinically relevant information and that advanced imaging may be more appropriate.

WORK-UP OF COMMUNITY-ACQUIRED PNEUMONIA (Health Benchmarks, Inc.) *OIE-016-08*

The Steering Committee members believed that this measure does not assess the efficiency of outpatient imaging services and is linked to an important outcome (e.g., decrease in pneumonia admissions or antibiotics prescribed). The Committee described the measure as an ineffective proxy for appropriate use of antibiotics. As specified, the measure did not discern whether performance is a reflection of poor quality or improper coding of pneumonia. The Committee emphasized that pneumonia may be a clinical diagnosis, and a chest x-ray may not be required.

PLAIN RADIOGRAPHY PRIOR TO MRI OF THE KNEE (Health Benchmarks, Inc.) *OIE-017-08*

The Steering Committee believed that this measure was not sufficiently clear in many respects. The major concern was that it could actually drive utilization of the plain radiograph and may not ultimately decrease utilization of MRI of the knee. The exclusion criteria were unclear. The Committee questioned the value of performing a radiograph prior to an MRI of the knee for some patients (e.g., acute sports injuries) for which the first-line study may be an MRI and a plain radiograph may not be needed. The Committee concluded that this measure was insufficiently specified, and it could be difficult to implement and could have possible unintended consequences (e.g., increase x-rays rather than decrease MRIs).

USE OF CONTRAST: ABDOMEN CT (CMS) *OIE-018-08*

This measure assesses the percentage of abdomen CT studies performed in nonemergency patients without the use of contrast material for diagnosis of calculi in the kidney ureter and the urinary tract, renal colic, and hydronephrosis. The Steering Committee asked why imaging studies would be performed in nonemergency patients with known stone disease. As specified, the measure presumes a patient with known stone disease should not have contrast, but it does not account for new or different pain, lack of stones, or other findings on the noncontrast CT scan. The Committee also noted concern with the inclusion of patients with hydronephrosis, because the use of contrast may be appropriate in this population. Although the measure developer emphasized that the radiologist review of a noncontrast study is important to determine if

a CT scan with contrast is indicated, the Committee noted this was not accounted for in the measure. The Committee believed that the measure information and measure submission form were confusing and contradictory. Finally, some Steering Committee members suggested limiting the number of ICD-9 codes to ensure that the proper population would be captured.

In response to the Steering Committee concerns, the measure developer provided an abdomen CT measure that addressed a broader population. The measure was no longer limited to patients with stone disease. The Steering Committee noted that the measure intent and the specifications remained unclear. The Committee also thought that the measure would be difficult to implement because of a vast number of exclusions. It was noted that the measure implies that both CT scans—with and without contrast—occurred during the same visit, but the measure did not include a time component to verify when the procedures occurred. Additionally, the Committee noted that evidence does not exist to determine the appropriate performance rate.

MAMMOGRAPHY FOLLOW-UP RATES

(CMS) *OIE-021-08*

This measure assesses the “recall rate” of an imaging facility providing mammography services. The Steering Committee noted that there is not a specific benchmark for mammography recall rates because there is no evidence of a correlation between recall rate and patient outcome. The measure developer suggested that the literature reports a typical recall rate of 11 percent to 14 percent and that a review of the Medicare data and a commercial dataset in Pennsylvania demonstrated large variation in

recall rates. Although the Steering Committee members agreed that very high recall rates or very low recall rates are not desirable, the Committee concluded that it is difficult to determine quality and efficiency without evidence of how the recall rate is associated with patient outcomes. The Committee noted that centers with a larger cohort of young patients (40 to 50 years of age) will have a higher recall rate because of known screening issues in that population (denser breasts and lack of prior studies for comparison). The Committee expressed concern that implementation of this measure may result in unintended consequences; for example, encouraging a reduction in recalls may lead to an increase in undiagnosed early cancers.

Recommendations

During the Consensus Development Process, the following areas were identified for further investigation and measure development:

- positivity rate for high-cost or high-risk examinations;
- all modalities to be accredited by a recognized accrediting body, such as ACR or IAC;
- frequency of procedural complications (e.g., interventional procedures);
- frequency of exams repeated because of inadequate or incomplete initial exams;
- frequency with which adequate tissue is obtained on biopsy;
- percentage of physician staff members who are fellowship trained;

- percentage of exams or procedures in which the final reports are completed within 24 hours;
- frequency with which the interpreting physician recommends additional studies;
- use of referring physician satisfaction surveys on an annual or more frequent basis;
- backlogs for scheduling outpatient exams in each modality;
- use of appropriately certified radiologic technologists;
- availability of documented radiation and MR safety programs;
- communication of findings to patients and other care providers; and
- site inspection by a qualified radiologic physicist at least every two years.

Other areas of discussion for future research included the following:


- research the utilization of and access to technology and care across specialties;
- examine quality gaps from the end-user perspective and encourage measure development in those areas;
- develop measures that address shared attribution;
- determine the quality domains of imaging and the measures needed to address those domains;
- encourage scientific studies to increase the evidence base to determine the efficacy of imaging studies;
- develop a framework for examining the appropriateness, utilization, cost/value, safety, and outcomes of diagnostic imaging studies;

- encourage imaging centers to educate referring physicians about when and how to conduct appropriate population-specific imaging studies based on appropriateness criteria developed by physician specialty societies; and
- examine claims-based measures to determine whether imaging studies are improving outcomes.

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National Voluntary Consensus Standards for Outpatient Imaging Efficiency: A Consensus Report

Appendix A

Specifications of the National Voluntary Consensus Standards for Outpatient Imaging Efficiency

THE FOLLOWING TABLE PRESENTS the detailed specifications for the National Quality Forum (NQF)-endorsed[®] *National Voluntary Consensus Standards for Outpatient Imaging Efficiency*. All information presented has been derived directly from measure sources/ developers without modification or alteration (except when the measure developer agreed to such modification during the NQF Consensus Development Process) and is current as of December 2008. All NQF-endorsed voluntary consensus standards are open source, meaning they are fully accessible and disclosed.

Appendix A – Specifications of the National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Stenosis measurement in carotid imaging studies* <i>(continued)</i>	Measure ID #: 0507 Review #: OIE-003-08	ACR AMA PCPI NCQA ^b	Final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement. Definition: “Direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement” includes direct angiographic stenosis calculation based on	Carotid image study report includes direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement CPT® Category II code: 3100F.	All final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed.	All final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed. CPT Procedure code: 70498, 70547, 70548, 70549, 75660, 75662, 75665, 75671, 75676, 75680, 93880, 93882.	None.	Medical Record, Administrative Claims Data, Laboratory, Observational Data.

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* Time-limited endorsement.

^a IP owner—intellectual property owner(s). For the most current specifications and supporting information, please refer to the IP owner:

ACR - American College of Radiology (www.acr.org)

AMA PCPI - American Medical Association Physician Consortium for Performance Improvement (www.ama-assn.org/ama/pub/physician-resources/clinical-practice-improvement/clinical-quality/physician-consortium-performance-improvement.shtml)

CMS - Centers for Medicare & Medicaid Services (www.cms.gov)

Harborview Medical Center (<http://uwmedicine.washington.edu/Facilities/Harborview>)

NCQA - National Committee for Quality Assurance (www.ncqa.org)

SNM - Society of Nuclear Medicine (www.snm.org)

^b Physician Performance Measures (Measures) and related data specifications, developed by the Physician Consortium for Performance Improvement® (the Consortium), are intended to facilitate quality improvement activities by physicians.

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Stenosis measurement in carotid imaging studies*			the distal lumen as the denominator for stenosis measurement <i>OR</i> an equivalent validated method referenced to the above method (e.g., for duplex ultrasound studies, velocity parameters that <u>correlate</u> with anatomic measurements that use the distal internal carotid lumen as the denominator for stenosis measurement).					
Inappropriate use of “probably benign” assessment category in mammography screening* <i>(continued)</i>	Measure ID #: 0508 Review #: OIE-005-08	ACR AMA PCPI NCQA ^b	Final reports classified as “probably benign.” Definition of “probably benign” classification: MQSA assessment category of “probably benign”; BI-RADS [®] category 3; or FDA-approved equivalent assessment category.* Instructions: For performance, a lower percentage, with a definitional target approaching 0%, indicates appropriate assessment	Mammogram assessment category of “probably benign,” documented. CPT Category II code: 3343F.	All final reports for screening mammograms.	Final reports for screening mammograms. ICD-9 Diagnosis codes: V76.11, V76.12 <i>AND</i> CPT Procedure code or HCPCS G-code: (with or without modifier 52): 77057, G0202.	None.	Medical Record, Administrative Claims Data, Laboratory, Observational Data.

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Inappropriate use of “probably benign” assessment category in mammography screening*			<p>of screening mammograms (e.g., the proportion of screening mammograms that are classified as “probably benign”).</p> <p>*See Appendix A-1 “Crosswalk of Mammogram Assessment Categories,” for a list of equivalent categories.</p>					
Reminder system for mammograms*	<p>Measure ID #: 0509</p> <p>Review #: OIE-008-08</p>	<p>ACR AMA PCPI NCQA^b</p>	<p>Patients whose information is entered into a reminder system* with a target due date for the next mammogram.</p> <p>*The reminder system should be linked to a process for notifying patients when their next mammogram is due and should include the following elements at a minimum: patient identifier, patient contact information, dates(s) of prior screening mammogram(s) (if known), and the target due date for the next mammogram.</p>	<p>Patient information entered into a reminder system with a target due date for the next mammogram.</p> <p>CPT Category II code: 7025F.</p>	<p>All patients aged 40 years and older undergoing a screening mammogram.</p>	<p>All patients aged 40 years and older undergoing a screening mammogram.</p> <p>ICD-9 Diagnosis code: V76.11, V76.12</p> <p><i>AND</i></p> <p>CPT Procedure code or HCPCS G-code: (with or without modifier 52): 77057, G0202.</p>	<p>None.</p>	<p>Medical Record, Administrative Claims Data, Laboratory, Observational Data.</p>

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Exposure time reported for procedures using fluoroscopy* <i>(continued)</i>	Measure ID #: 0510 Review #: OIE-009-08	ACR AMA PCPI NCQA ^b	Final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time.	Radiation exposure or exposure time in final report for procedure using fluoroscopy, documented. CPT Category II code: 6045F.	All final reports for procedures using fluoroscopy.	All final reports for procedures using fluoroscopy. CPT Procedure code <i>OR</i> HCPCS G-code: 0062T, 0075T, 0080T, 24516, 25606, 25651, 26608, 26650, 26676, 26706, 26727, 27235, 27244, 27245, 27506, 27509, 27756, 27759, 28406, 28436, 28456, 28476, 36597, 36598, 37182, 37183, 37184, 37187, 37188, 37210, 43260, 43261, 43262, 43263, 43264, 43265, 43267, 43268, 43269, 43271, 43272, 43752, 44500, 49440, 49441, 49442, 49446, 49450, 49451, 49452, 49460, 49465, 50382, 50384, 50385, 50386, 50387, 50389, 50590, 61623, 62263, 62264, 62280, 62281, 62282, 62318, 62319, 63610, 64510, 64520, 64530, 64561, 64605, 64610, 64620, 64622,	None.	Medical Record, Administrative Claims Data, Laboratory, Observational Data.

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^o	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Exposure time reported for procedures using fluoroscopy* <i>(continued)</i>						64626, 64680, 64681, 70010, 70015, 70170, 70332, 70370, 70371, 70373, 70390, 71023, 71034, 71040, 71060, 71090, 72240, 72255, 72265, 72270, 72275, 72285, 72291, 72295, 73040, 73085, 73115, 73525, 73542, 73580, 73615, 74190, 74210, 74220, 74230, 74235, 74240, 74241, 74245, 74246, 74247, 74249, 74250, 74251, 74260, 74270, 74280, 74283, 74290, 74291, 74300, 74305, 74320, 74327, 74328, 74329, 74330, 74340, 74355, 74360, 74363, 74400, 74410, 74415, 74420, 74425, 74430, 74440, 74445, 74450, 74455, 74470, 74475, 74480, 74485, 74740, 74742, 75600, 75605, 75625, 75630, 75650, 75658, 75660, 75662, 75665, 75671, 75676, 75680, 75685,		

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^o	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Exposure time reported for procedures using fluoroscopy*						75705, 75710, 75716, 75722, 75724, 75726, 75731, 75733, 75736, 75741, 75743, 75746, 75756, 75790, 75801, 75803, 75805, 75807, 75809, 75810, 75820, 75822, 75825, 75827, 75831, 75833, 75840, 75842, 75860, 75870, 75872, 75880, 75885, 75887, 75889, 75891, 75893, 75894, 75896, 75898, 75900, 75901, 75902, 75940, 75952, 75953, 75954, 75956, 75957, 75958, 75959, 75960, 75961, 75962, 75966, 75970, 75978, 75980, 75982, 75984, 75992, 75994, 75995, 76000, 76001, 76080, 76100, 76101, 76102, 76120, 76150, 76496, 77001, 77002, 77003, 77031, 77053, 77054, 77071, 92611, 93555, 93556, G0106, G0120, G0122, G0259, G0260, G0275, G0278, G0365.		

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
Correlation with existing imaging studies for all patients undergoing bone scintigraphy*	Measure ID #: 0511 Review #: OIE-010-08	SNM AMA PCPI NCQA ^c	Final reports that include physician documentation of correlation with existing relevant* imaging studies (e.g., x-ray, MRI, CT). *Relevant imaging studies are defined as studies that correspond to the same anatomical region in question.	Final report for bone scintigraphy study includes correlation with existing relevant imaging studies (e.g., x-ray, MRI, CT) corresponding to the same anatomical region in question. CPT Category II code: 3570F.	All final reports for patients, regardless of age, undergoing bone scintigraphy.	All patients, regardless of age, receiving bone scintigraphy. CPT Procedure codes: 78300, 78305, 78306, 78315, 78320.	System reason for not documenting correlation with existing relevant imaging studies in final report (e.g., no existing relevant imaging study available,* patient did not have a previous relevant imaging study). *Correlative studies are considered to be unavailable if relevant studies (reports and/or actual examination material) from other imaging modalities exist but could not be obtained after reasonable efforts to retrieve the studies <u>are made</u> by the interpreting physician prior to the finalization of the bone scintigraphy report.	Medical Record, Administrative Claims Data, Laboratory, Observational Data.

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^c Physician Performance Measures (Measures) and related data specifications have been developed by the American Medical Association (AMA) in collaboration with the Physician Consortium for Performance Improvement (the Consortium) and the National Committee for Quality Assurance (NCQA).

These performance Measures are not clinical guidelines and do not establish a standard of medical care, and have not been tested for all potential applications.

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
<p>Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication</p> <p><i>(continued)</i></p>	<p>Measure ID #: 0512</p> <p>Review #: OIE-012-08</p>	Harborview Medical Center	<p>Number of patients who receive cervical spine radiographs for trauma who either^d</p> <ol style="list-style-type: none"> 1. Do not fulfill the NEXUS Low-Risk Criteria for cervical spine injury: neck pain or posterior mid-line cervical spine tenderness, distracting pain, neurological deficits, reduced level of consciousness or intoxication, or 2. Do not fulfill the Canadian C-Spine Rule Criteria for cervical spine radiography (applies to stable trauma patients with a GCS of 15 and a potential C-Spine Injury). <ol style="list-style-type: none"> a. If there is a high-risk factor, radiography is necessitated (Age 65 or older, 	None.	Number of cervical spine radiographs performed on trauma patients.	None.	<ul style="list-style-type: none"> ■ Patients who have not experienced trauma. ■ Patients <16 years of age. ■ Patients >65 years of age. ■ Patients with a reduced ability to communicate (permanent verbal or cognitive dysfunction). 	Medical Record, Registry, Laboratory.

^d Eyre A, Overview and comparison of NEXUS and Canadian C-spine rules. *Am J Clin Med*, 2006;3(4):12-15. Available at www.aapsga.org/ajcm/2006/fall/pdf/ajcm-fall2006-article03.pdf

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
<p>Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication <i>(continued)</i></p>			<p>significant mechanism** or parathesias in the extremities).</p> <p>b. If there is a low-risk factor which does not permit safe assessment of the range of motion then radiography should be performed. Low-risk factors permitting safe range of motion assessment include:</p> <p>i. Simple rear-end collision (excluding rollover, collision with bus, large truck, vehicle traveling at high speeds or being pushed into oncoming traffic), or</p>					

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<p>Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication <i>(continued)</i></p>			<p>ii. Patient found sitting in the Emergency Department or ambulatory after the incident or delayed onset of neck pain, or</p> <p>iii. Absence of any midline cervical tenderness.</p> <p>c. Range of motion assessment: Is the patient able to actively rotate the neck 45 degrees to the left and right? If the patient is unable, radiography should be performed, otherwise radiography should not be performed.</p> <p>**Dangerous mechanisms include a fall from an elevation of ≥3 feet or 5 stairs, an axial load to the head (e.g., diving); a</p>					

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
<p>Percentage of patients undergoing cervical spine radiographs in trauma who do not have neck pain, distracting pain, neurological deficits, reduced level of consciousness, or intoxication</p>			<p>motor vehicle collision at high speed (>100 kph or 60 mph), or with rollover of ejection; a collision involving a motorized recreational vehicle, or a bike collision.</p> <p>Numerous well-designed large prospective studies (specifically the NEXUS and Canadian cervical spine rule studies) have evaluated the efficacy of cervical spine radiography in trauma, and they have found that no patient has had a clinically significant cervical spine injury if they had no neck pain, no distracting pain, no neurological deficits, a normal level of consciousness, and no intoxication.</p>					

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Use of contrast: thorax CT <i>(continued)</i>	Measure ID #: 0513 Review #: OIE-019-08	CMS	Thorax CT—Use of combined studies (with and without contrast). The number of thorax CT studies with and without contrast (combined studies). Sum of global and technical units associated with CPT codes: 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 out number	71270—Thorax CT With and Without Contrast.	Thorax CT—Use of combined studies (with and without contrast). The number of thorax CT studies performed (with contrast, without contrast or both with and without contrast). 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.	71250—Thorax Without Contrast 71260—Thorax CT With Contrast 71270—Thorax CT With and Without Contrast.	None.	Administrative Claims Data.

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<p>Use of contrast: thorax CT</p>			<p>Technical component claims due to over-reads.</p> <p>To capture all outpatient and office volume, both office (typically paid under the MPFS) and facility claims (typically paid under the OPFS/ APC methodology) should be considered. In the absence of a TC or 26 modifier code, outpatient facility claims should be considered technical components and included in utilization.</p>					

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
<p>MRI lumbar spine for low back pain <i>(continued)</i></p>	<p>Measure ID #: 0514 Review #: OIE-020-08</p>	CMS	<p>Number of Lumbar MRI studies where there are indications in the claim file of antecedent conservative therapy among patients with low back pain (excluding operative, tumor, and acute injury cases).</p> <p>Antecedent conservative therapy may include codes for manual therapy or massage, chiropractic care, or a prior exam for low back pain evaluation.</p> <p>Sum of global and technical units, billed with an ICD-9 code in Table 1, for CPT codes:</p> <p>72148—MRI Lumbar Spine Without Contrast; 72149—MRI Lumbar Spine With Contrast; 72158—MRI Lumbar Spine With and Without Contrast.</p>	<p>72148—MRI Lumbar Spine Without Contrast; 72149—MRI Lumbar Spine With Contrast; 72158—MRI Lumbar Spine With and Without Contrast.</p> <p>Where claims-based indications of antecedent conservative therapy is present.</p> <p>Indications of claims based antecedent conservative therapy include:</p> <p>1. Claim(s) in the 60 days preceding the Lumbar Spine MRI for physical therapy.</p> <p>CPT codes: 97110—Therapeutic procedure, one or more areas, each 15 minutes; therapeutic exercise to develop strength</p>	<p>Number of Lumbar MRI studies for patients with low back pain (excluding operative, tumor, and acute injury cases).</p> <p>Sum of global and technical units, billed with an ICD-9 code in Table 1:</p> <p>72148—MRI Lumbar Spine Without Contrast; 72149—MRI Lumbar Spine With Contrast; 72158—MRI Lumbar Spine With and Without Contrast.</p>	<p>72148—MRI Lumbar Spine Without Contrast; 72149—MRI Lumbar Spine With Contrast; 72158—MRI Lumbar Spine With and Without Contrast.</p> <p>Billed with a diagnosis (ICD-9): 721.3 Lumbosacral spondylosis without myelopathy 721.90 Spondylosis of unspecified site without mention of myelopathy 722.10 Displacement of lumbar intervertebral disc without myelopathy 722.52 Degeneration of lumbar or lumbosacral intervertebral disc 722.6 Degeneration of intervertebral disc, site unspecified 722.93 Other unspecified disco disorder of lumbar region</p>	<p>Lumbar Spine MRI studies without an ICD-9 related to low back pain.</p> <p>Patients with Cancer: ICD-9-CM codes 140208, 230-234, 235-239.</p> <p>(Recent) Trauma: ICD-9-CM codes 800, 839, 850-854, 860-869, 905-909, 926.11, 926.12, 929, 952, 958-959</p> <p>(Recent) IV Drug Abuse: ICD-9-CM codes 304.0, 304.1X, 304.2X, 304.4X, 305.4X, 305.5X, 305.6X, 305.7X</p> <p>(Recent) Neurologic Impairment: ICD-9-CM codes 344.60, 729.2</p> <p>Human Immunodeficiency Virus (HIV): ICD-9-CM codes 042-044; 279.3</p>	Administrative Claims Data.

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MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
MRI lumbar spine for low back pain <i>(continued)</i>			<p>Where claims-based indications of antecedent conservative therapy is present.</p> <p>Indications of claims-based antecedent conservative therapy include:</p> <p>1. Claim(s) in the 60 days preceding the Lumbar Spine MRI for physical therapy.</p> <p>CPT codes: 97110—Therapeutic procedure, one or more areas, each 15 minutes; therapeutic exercise to develop strength and endurance, range of motion and flexibility; 97112—Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities;</p>	<p>and endurance, range of motion and flexibility; 97112—Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and/or proprioception for sitting and/or standing activities; 97113—Aquatic therapy with therapeutic exercises; 97124—Massage, including effleurage, petrissage and/or tapotement (stroking, compression, percussion); 97140—Manual therapy technical (e.g., mobilization/manipulation, manual lymphatic drainage, manual traction), one or</p>		<p>724.02 Spinal stenosis of lumbar region 724.2 Lumbago 724.3 Sciatica 724.5 Unspecified backache 724.6 Disorders of sacrum 724.70 Unspecified disorder of coccyx 724.71 Hypermobility of coccyx 724.79 Other disorder of the coccyx 738.5 Other acquired deformity of back or spine 739.3 Nonallopathic lesion of lumbar region, not elsewhere classified 739.4 Nonallopathic lesion of sacral regions, not elsewhere classified 846.0 Sprain and strain of lumbosacral (joint).</p>	<p>Unspecified Immune Deficiencies; Intraspinal abscess: ICD-9-CM codes 324.9, 324.1.</p>	

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MRI lumbar spine for low back pain <i>(continued)</i>			97113—Aquatic therapy with therapeutic exercises; 97124—Massage, including effleurage, petrissage and/or tapotement (stroking, compression, percussion); 97140—Manual therapy technical (e.g., mobilization/manipulation, manual lymphatic drainage, manual traction), one or more regions, each 15 minutes. <i>OR</i> 2. Claim(s) in the 60 days preceding the Lumbar Spine MRI for chiropractic evaluation and manipulative treatment. CPT codes: 98940—Chiropractic manipulative treatment (CMT); spinal, one to two regions;	more regions, each 15 minutes. <i>OR</i> 2. Claim(s) in the 60 days preceding the Lumbar Spine MRI for chiropractic evaluation and manipulative treatment. CPT codes: 98940—Chiropractic manipulative treatment (CMT); spinal, one to two regions; 98941—Spinal, three to four regions; 98942—Spinal, five regions; 98943—Extraspinal, one or more regions. <i>OR</i> 3. Claim(s) >28 days and <60 days preceding the Lumbar Spine MRI				

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MRI lumbar spine for low back pain <i>(continued)</i>			98941—Spinal, three to four regions; 98942—Spinal, five regions; 98943—Extraspinal, one or more regions. <i>OR</i> 3. Claim(s) >28 days and <60 days preceding the Lumbar Spine MRI for low back pain evaluation and management. CPT codes: 99201-99205, 99211-99215, 99241-99245, 99341-99345, 99347-99350, 99354-99357, 99385-99387, 99395-99397, 99401-99404, 99455-99456, 99499. Billed with a diagnosis (ICD-9) listed in Table 1.	for low back pain evaluation and management. CPT codes: 99201-99205, 99211-99215, 99241-99245, 99341-99345, 99347-99350, 99354-99357, 99385-99387, 99395-99397, 99401-99404, 99455-99456, 99499. Billed with a diagnosis (ICD-9) listed in Table 1. Table 1: ICD-9 721.3 Lumbosacral spondylosis without myelopathy 721.90 Spondylosis of unspecified site without mention of myelopathy				

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MRI lumbar spine for low back pain <i>(continued)</i>			Table 1: ICD-9 721.3 Lubosacral spondylosis without myelopathy 721.90 Spondylosis of unspecified site without mention of myelopathy 722.10 Displacement of lumbar intervertebral disc without myelopathy 722.52 Degeneration of lumbar or lumbosacral intervertebral disc 722.6 Degeneration of intervertebral disc, site unspecified 722.93 Other unspecified disco disorder of lumbar region 724.02 Spinal stenosis of lumbar region 724.2 Lumbago 724.3 Sciatica 724.5 Unspecified backache 724.6 Disorders of sacrum	722.10 Displacement of lumbar intervertebral disc without myelopathy 722.52 Degeneration of lumbar or lumbosacral intervertebral disc 722.6 Degeneration of intervertebral disc, site unspecified 722.93 Other unspecified disco disorder of lumbar region 724.02 Spinal stenosis of lumbar region 724.2 Lumbago 724.3 Sciatica 724.5 Unspecified backache 724.6 Disorders of sacrum 724.70 Unspecified disorder of coccyx 724.71 Hypermobility of coccyx 724.79 Other disorder of the coccyx				

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Appendix A – Specifications of the National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
MRI lumbar spine for low back pain <i>(continued)</i>			724.70 Unspecified disorder of coccyx 724.71 Hypermobility of coccyx 724.79 Other disorder of the coccyx 738.5 Other acquired deformity of back or spine 739.3 Nonallopathic lesion of lumbar region, not elsewhere classified 739.4 Nonallopathic lesion of sacral regions, not elsewhere classified 846.0 Sprain and strain of lumbosacral (joint) (ligament) 846.1 Sprain and strain of sacroliliac (ligament) 846.2 Sprain and strain of sacrospinatus (ligament) 846.3 Sprain and strain of sacrotuberous (ligament)	738.5 Other acquired deformity of back or spine 739.3 Nonallopathic lesion of lumbar region, not elsewhere classified 739.4 Nonallopathic lesion of sacral regions, not elsewhere classified 846.0 Sprain and strain of lumbosacral (joint) (ligament) 846.1 Sprain and strain of sacroliliac (ligament) 846.2 Sprain and strain of sacrospinatus (ligament) 846.3 Sprain and strain of sacrotuberous (ligament) 846.8 Other specified sites of sacroiliac region sprain and strain				

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Appendix A – Specifications of the National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
MRI lumbar spine for low back pain <i>(continued)</i>			<p>846.8 Other specified sites of sacroiliac region sprain and strain</p> <p>846.9 Unspecified site of sacroiliac region sprain and strain</p> <p>847.2 Lumbar sprain and strain.</p> <p>MRI Lumbar Spine studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.</p> <p>Professional component claims will out number Technical component claims due to over-reads.</p> <p>To capture all outpatient/office volume, both office (typically paid under MPFS) and facility claims (typically paid under the OPPS/APC methodology) should be</p>	<p>846.9 Unspecified site of sacroiliac region sprain and strain</p> <p>847.2 Lumbar sprain and strain.</p> <p>MRI Lumbar Spine studies can be billed separately for the technical and professional components, or billed globally to include both the professional and technical components.</p> <p>Professional component claims will out number Technical component claims due to over-reads.</p> <p>To capture all outpatient/office volume, both office (typically paid under MPFS) and facility claims (typically paid under the OPPS/APC methodology) should be considered. In the absence of a TC or</p>				

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Appendix A – Specifications of the National Voluntary Consensus Standards for Outpatient Imaging Efficiency

MEASURE TITLE	MEASURE NUMBERS	IP OWNER(S) ^a	NUMERATOR	NUMERATOR CODING	DENOMINATOR	DENOMINATOR CODING	EXCLUSIONS	DATA SOURCE
<p>MRI lumbar spine for low back pain</p>			<p>considered. In the absence of a TC or 26 modifier code, outpatient facility claims should be considered technical components and included in utilization.</p> <p>A technical unit can be identified by the use of modifier code 'TC.' A global unit can be identified by the absence of a 'TC' of '26' modifier.</p>	<p>26 modifier code, outpatient facility claims should be considered technical components and included in utilization.</p> <p>A technical unit can be identified by the use of modifier code 'TC.' A global unit can be identified by the absence of a 'TC' of '26' modifier.</p>				

Appendix A-1: Crosswalk of Mammogram Assessment Categories

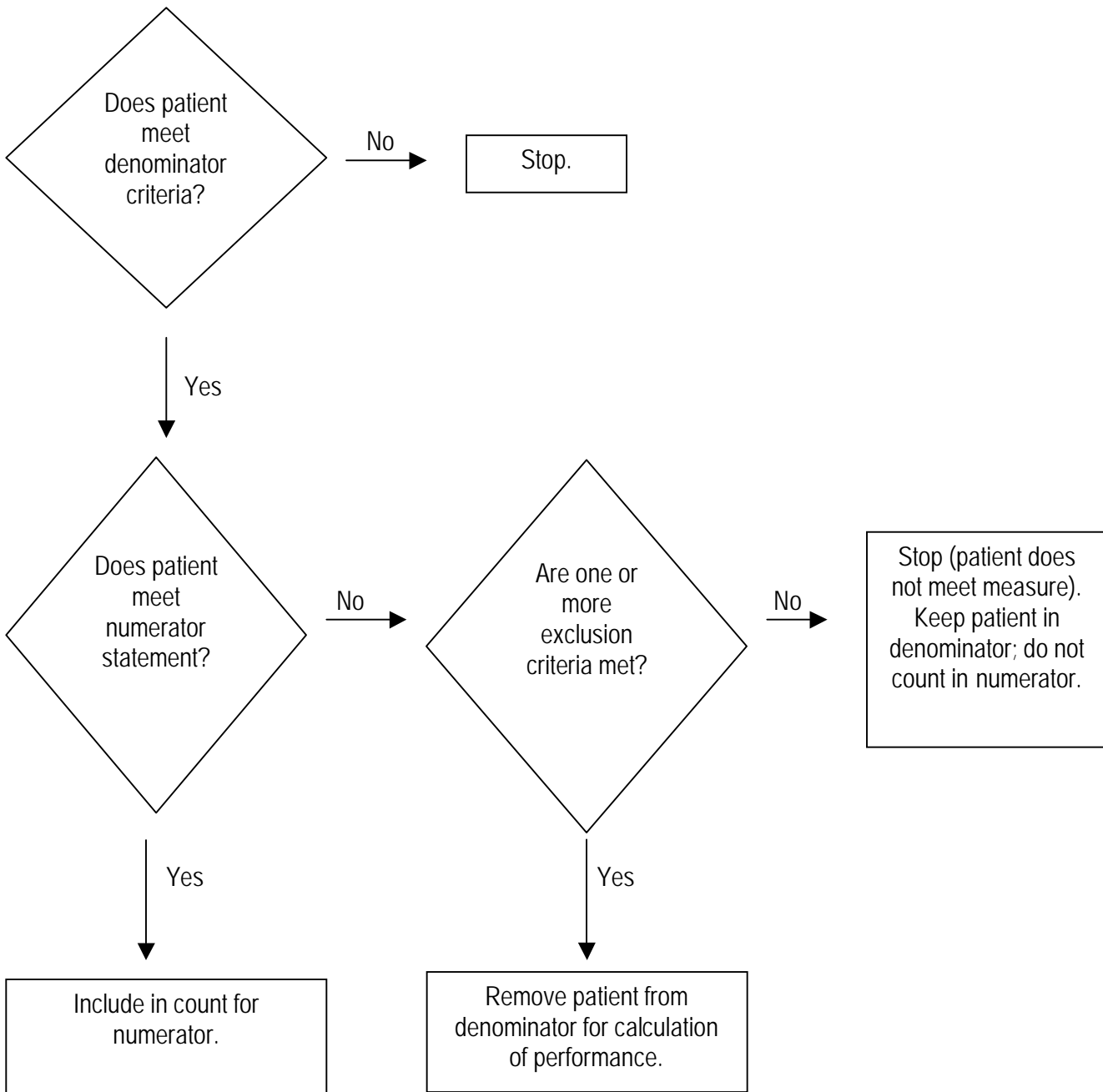
Referenced in Measures 0509 (OIE-008-08)

<i>MQSA Assessment Category</i>	<i>Applicable BI-RADS® Category</i>	<i>Other FDA-Approved Assessment Descriptions</i>
<i>Incomplete</i>	<i>0</i>	Incomplete: Needs Additional Imaging Evaluation Incomplete: Additional Imaging Evaluation Needed Incomplete: Need Additional Imaging Evaluation - Comparison with Prior Studies Incomplete: Need Additional Imaging Evaluation and/or Prior Mammograms for Comparison Incomplete: Need Prior Mammograms for Comparison Need Additional Imaging Evaluation (<i>the term "Incomplete" can be inferred in this example as this is the only Incomplete BI-RADS® assessment category</i>) Incomplete Mammogram: Need Additional Imaging Evaluation
<i>Negative</i>	<i>1</i>	Negative Mammogram
<i>Probably Benign</i>	<i>2</i>	Benign Finding Benign Findings Benign Abnormality Benign Abnormalities Benign Mammogram
<i>Probably Benign</i>	<i>3</i>	Probably Benign Finding Probably Benign Findings Probably Benign Abnormality Probably Benign Abnormalities Probably Benign - Short Interval Follow-up Suggested Probably Benign Finding - Short Interval Follow-up Suggested Probably Benign Mammogram
<i>Suspicious</i>	<i>4</i>	Suspicious Finding Suspicious Findings Suspicious Abnormality Suspicious Abnormalities Suspicious for Malignancy Suspicious of Malignancy Suspicious Abnormality - Biopsy Should Be Considered Suspicious Finding - Biopsy Should Be Considered Suspicious Mammogram

<i>Highly Suggestive of Malignancy</i>	5	Highly Suggestive for Malignancy Highly Suggestive of Malignancy - Appropriate Action Should Be Taken
<i>Known Biopsy Proven Malignancy</i>	6	Known Biopsy Proven Cancer Known Malignancy Known Cancer

Appendix A-2: PCPI Algorithm for How Measures Are Calculated for *Performance* Measurement

In calculating performance measures, all patients meeting a given measure's eligibility criteria (denominator) are identified, and all positive incidences of quality (numerator) are subsequently identified. For all eligible patients who are *not* identified as part of the numerator, exclusion criteria are applied to determine whether a patient did not achieve the aspect of care for an allowable reason.



PCPI Algorithm for Reporting of *Performance* to Physicians and Others

For performance purposes, measures are calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions. Feedback using percentages and raw numbers is recommended for both process and outcome measures.

Numerator (A) Includes:

Number of patients meeting numerator criteria

Performance Denominator (PD) Includes:

Number of patients meeting criteria for denominator inclusion

Denominator Exclusions (C) Include:

Number of patients with valid medical, patient or system exclusions (where applicable; will differ by measure)

Performance Calculation

$$\frac{A \text{ (\# of patients meeting numerator criteria)}}{PD \text{ (\# patients in denominator)} - C \text{ (\# patients with valid denominator exclusions)}}$$

Calculation of Exclusion Rates for Process Measures

Currently, the PCPI captures exclusions for process measures using three categories – medical, patient or system reasons. Exclusions should be reported providing raw numbers and percentages both for the exclusions overall and for each of the three categories.

Overall Exclusion Calculation

$$\frac{C \text{ (\# of patients with any valid exclusion)}}{PD \text{ (\# patients in denominator)}}$$

AND

Exclusion Calculation by Type

$\frac{C_1 \text{ (\# patients with medical reason)}}{PD \text{ (\# patients in denominator)}}$	$\frac{C_2 \text{ (\# patients with patient reason)}}{PD \text{ (\# patients in denominator)}}$	$\frac{C_3 \text{ (\# patients with system reason)}}{PD \text{ (\# patients in denominator)}}$
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Calculation of Exclusion Rates for Outcome Measures

For outcome measures, the PCPI captures specific exclusions using ICD-9 or CPT codes and does not categorize exclusions using the three categories. The total numbers of patients excluded overall should be provided at a minimum as well as the specific numbers of patients excluded by ICD-9 or CPT code.

Radiology Calculation Algorithms

0507 (OIE-003-08): Stenosis measurement in carotid imaging reports

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Numerator (A) Includes:

- Final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement

Denominator (PD) Includes:

- All final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed

Performance Calculation

$$\frac{\text{A (\# of patients meeting measure criteria)}}{\text{PD (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement
PD	# of final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

A. Final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement

D. Final carotid imaging study reports that do not include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement

Reporting Denominator (RD) Includes:

- All final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed

Reporting Calculation

$$\frac{\text{A (\# of final reports meeting numerator criteria) + D (\# of final reports NOT meeting numerator criteria)}}{\text{RD (\# of final reports in denominator)}}$$

Components for this measure are defined as:

A	# final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement
D	# final carotid imaging study reports that <u>do not</u> include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement
RD	# of final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed

0508 (OIE-005-08): Inappropriate use of “probably benign” assessment category in mammography screening

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Numerator (A) Includes:

- Final reports classified as “probably benign”

*Definition of “probably benign” classification: MQSA assessment category of “probably benign”; BI-RADS® category 3; or FDA-approved equivalent assessment category**

*See enclosed document, "Crosswalk of Mammogram Assessment Categories," for a list of equivalent categories

Denominator (PD) Includes:

- All final reports for screening mammograms

Performance Calculation

$$\frac{\text{A (\# of patients meeting measure criteria)}}{\text{PD (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of final reports classified as “probably benign”
PD	# of final reports for screening mammograms

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Final reports classified as “probably benign”
- D. Final reports not classified as “probably benign”

*Definition of “probably benign” classification: MQSA assessment category of “probably benign”; BI-RADS® category 3; or FDA-approved equivalent assessment category**

*See enclosed document, "Crosswalk of Mammogram Assessment Categories," for a list of equivalent categories

Reporting Denominator (RD) Includes:

- All final reports for screening mammograms

Reporting Calculation

$$\frac{A \text{ (\# of patients meeting numerator criteria) + D (\# of patients NOT meeting numerator criteria)}}{RD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of final reports classified as "probably benign"
D	# of final reports <u>not</u> classified as "probably benign"
RD	# of final reports for screening mammograms

0509 (OIE-008-08): Reminder system for mammograms

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Performance Numerator (A) Includes:

- Patients whose information is entered into a reminder system* with a target due date for the next mammogram

**The reminder system should be linked to a process for notifying patients when their next mammogram is due and should include the following elements at a minimum: patient identifier, patient contact information, dates(s) of prior screening mammogram(s) (if known), and the target due date for the next mammogram*

Performance Denominator (PD) Includes:

- All patients aged 40 years and older undergoing a screening mammogram

Performance Calculation

$$\frac{A \text{ (\# of patients meeting measure criteria)}}{PD \text{ (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of patients whose information is entered into a reminder system* with a target due date for the next mammogram
PD	# of patients aged 40 years and older undergoing a screening mammogram

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Patients whose information is entered into a reminder system* with a target due date for the next mammogram
- D. Patients whose information is not entered into a reminder system* with a target due date for the next mammogram

Reporting Denominator (RD) Includes:

- All patients aged 40 years and older undergoing screening mammograms

Reporting Calculation

$$\frac{A \text{ (\# of final reports meeting numerator criteria)} + D \text{ (\# of final reports NOT meeting numerator criteria)}}{RD \text{ (\# of final reports in denominator)}}$$

Components for this measure are defined as:

A	# of patients whose information is entered into a reminder system* with a target due date for the next mammogram
D	# of patients whose information is <u>not</u> entered into a reminder system* with a target due date for the next mammogram
RD	# of patients aged 40 years and older undergoing a screening mammogram

05010 (OIE-009-08): Exposure time reported for procedures using fluoroscopy

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator, and Denominator Exclusions.

Performance Numerator (A) Includes:

- Final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time

Performance Denominator (PD) Includes:

- All final reports for procedures using fluoroscopy

Performance Calculation

$$\frac{\text{A (\# of patients meeting measure criteria)}}{\text{PD (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time
PD	# of final reports for procedures using fluoroscopy

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

- A. Final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time
- D. Final reports for procedures using fluoroscopy that do not include documentation of radiation exposure or exposure time

Reporting Denominator (RD) Includes:

- All final reports for procedures using fluoroscopy

Reporting Calculation

$$\frac{\text{A (\# of final reports meeting numerator criteria) + D (\# of final reports NOT meeting numerator criteria)}}{\text{RD (\# of final reports in denominator)}}$$

Components for this measure are defined as:

A	# of final reports for procedures using fluoroscopy that include documentation of radiation exposure or exposure time
D	# of final reports for procedures using fluoroscopy that <u>do not</u> include documentation of radiation exposure or exposure time
RD	# of final reports for procedures using fluoroscopy

Nuclear Medicine
Calculation Algorithms

05011 (OIE-10-08): Correlation With Existing Imaging Studies for All Patients Undergoing Bone Scintigraphy

Calculation for Performance

For performance purposes, this measure is calculated by creating a fraction with the following components: Numerator, Denominator.

Performance Numerator (A) Includes:

- Final reports that include physician documentation of correlation with existing relevant imaging studies (eg, x-ray, MRI, CT, etc.)

Performance Denominator (PD) Includes:

- All final reports for patients, regardless of age, undergoing bone scintigraphy

Denominator Exclusions (C) Include:

- System reason for not documenting correlation with existing relevant imaging studies in final report (eg, no existing relevant imaging study available, patient did not have a previous imaging study)

Performance Calculation

$\frac{A \text{ (\# of patients meeting measure criteria)}}{PD \text{ (\# of patients in denominator)} - C \text{ (\# of patients with valid denominator exclusions)}}$

Components for this measure are defined as:

A	# of final reports that include physician documentation of correlation with existing relevant imaging studies (eg, x-ray, MRI, CT, etc.)
PD	# of final reports for patients, regardless of age, undergoing bone scintigraphy
C	# of final reports with a system reason for not documenting correlation with existing relevant imaging studies (ie, no existing relevant imaging study available)

Calculation for Reporting

For reporting purposes, this measure is calculated by creating a fraction with the following components: Reporting Numerator and Reporting Denominator

Reporting Numerator includes each of the following instances:

A. Final reports that include physician documentation of correlation with existing relevant imaging studies (eg, x-ray, MRI, CT, etc.)

C. Final reports that do not include physician documentation of correlation with existing relevant imaging studies, but for whom there is a documented system reason for not doing so

D. Final reports that do not include physician documentation of correlation with existing relevant imaging studies and there is no documented system reason for not doing so

Reporting Denominator (RD) Includes:


- All final reports for patients, regardless of age, undergoing bone scintigraphy

Reporting Calculation

$$\frac{\text{A (\# of patients meeting numerator criteria) + C (\# of patients with valid exclusions) + D (\# of patients NOT meeting numerator criteria)}}{\text{RD (\# of patients in denominator)}}$$

Components for this measure are defined as:

A	# of final reports that include physician documentation of correlation with existing relevant imaging studies (eg, x-ray, MRI, CT, etc.)
C	# of final reports that <u>do not</u> include physician documentation of correlation with existing relevant imaging studies, but for whom there is a documented system reason for not doing so
D	# of final reports that <u>do not</u> include physician documentation of correlation with existing relevant imaging studies, and there is no documented system reason for not doing so
RD	# of final reports for patients, regardless of age, undergoing bone scintigraphy



National Voluntary Consensus Standards
for Outpatient Imaging Efficiency: A Consensus Report

Appendix B
Other NQF-Endorsed Imaging Efficiency
Consensus Standards

Appendix B – Other NQF-Endorsed Imaging Efficiency Consensus Standards

MEASURE	IP OWNER(S) ^a	NUMERATOR	DENOMINATOR	EXCLUSIONS
Carotid imaging reports^b	American Academy of Nursing, American College of Radiology, American Medical Association, National Committee for Quality Assurance	Final carotid imaging study reports that include direct or indirect reference to measurements of distal internal carotid diameter as the denominator for stenosis measurement. ICD-9 diagnosis codes, CPT procedure codes, and patient demographics (age, gender, etc) are used to determine patients that are included in the measure. ■ ICD-9-CM codes: 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91, 435.0, 435.1, 435.2, 435.3, 435.8, 435.9, 997.02 AND ■ CPT codes with or without Modifier 26 to specify physician component: 70547, 70548, 70549, 70498, 75660, 75662, 7566, 75671, 75676, 75680, 93880, 93882.	All final reports for carotid imaging studies (neck MR angiography [MRA], neck CT angiography [CTA], neck duplex ultrasound, carotid angiogram) performed for patients aged 18 years and older with a diagnosis of ischemic stroke or TIA.	None.

^a Intellectual Property owner(s). For the most current specifications please refer to the IP owner(s).

^b Endorsed May 2007.

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Appendix B – Other NQF-Endorsed Imaging Efficiency Consensus Standards

MEASURE	IP OWNER(S) ^a	NUMERATOR	DENOMINATOR	EXCLUSIONS
Computed tomography (CT) or magnetic resonance imaging (MRI) reports^b	American College of Radiology, American Medical Association, National Committee for Quality Assurance, American Medical Association Physician Consortium for Performance Improvement, American College of Nurse-Midwives	Final reports of the initial CT or MRI that include documentation of the presence or absence of each of the following: hemorrhage and mass lesion and acute infarction.	All final reports for CT or MRI studies of the brain performed within 24 hours of arrival to the hospital for patients aged 18 years and older with the admitting diagnosis of ischemic stroke or TIA or intracranial hemorrhage ICD-9 Diagnosis codes, CPT procedure codes, CPT Category II codes, and patient demographics (age, gender, etc.) are used to determine patients that are included in the measure. <ul style="list-style-type: none"> ICD-9-CM codes: 431, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91, 435.0, 435.1, 435.2, 435.3, 435.8, 435.9, 997.02 AND <ul style="list-style-type: none"> CPT II 3111F: CT or MRI of the brain performed within 24 hours of arrival to the hospital; 3112F: CT or MRI of the brain performed greater than 24 hours of arrival to the hospital AND <ul style="list-style-type: none"> CPT codes with or without Modifier 26 to specify physician component: 70450, 70460, 70470, 70551, 70552, 70553, 0042T. 	None.

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Appendix B – Other NQF-Endorsed Imaging Efficiency Consensus Standards

MEASURE	IP OWNER(S) ^a	NUMERATOR	DENOMINATOR	EXCLUSIONS
Low back pain (LBP): repeat imaging studies^c	National Committee for Quality Assurance	The number of patients with inappropriate imaging studies (as defined in denominator).	Patients with more than one imaging study and patients with only one imaging study and no documentation in medical record of physician asking about prior imaging.	Patients with red flags or worsening/progressive signs.
LBP: appropriate imaging for acute back pain^c	National Committee for Quality Assurance	The number of patients with an order for or report on an imaging study during the six weeks after pain onset.	Patients with back pain lasting six weeks or less.	Patients with documentation of red flags
LBP: use of imaging studies^c	National Committee for Quality Assurance	Patients who received an imaging study (plain x-ray, MRI, CT scan) conducted on the Episode Start Date or in the 28 days following the Episode Start Date.	All patients aged 18-50 years as of December 31 of the measurement year with a new episode of low back pain.	Exclude patients with an indication for imaging studies in the presence of low back pain. Cancer: ICD-9-CM codes: 140-208, 230-239 (Recent) Trauma: ICD-9-CM codes: 800-839, 850-854, 860-869, 905-909, 926.11, 926.12, 929, 952, 958-959 (Recent) IV drug abuse: ICD-9-CM codes: 304.0, 304.1x, 304.2x, 304.4x, 305.4x, 305.5x, 305.6x, 305.7x (Recent) Neurologic impairment: ICD-9-CM codes: 344.60, 729.2.

^c Endorsed December 2007.

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