NATIONAL QUALITY FORUM

Memo

TO: NQF Members

FR: NQF Staff

RE: Voting Draft Report: *NQF-Endorsed Measures for Cardiovascular Conditions*

DA: July 22, 2014

Background

Cardiovascular disease is the leading cause of death for men and women in the United States. It accounts for approximately $312.6 billion in health care expenditures annually. Coronary heart disease (CHD) accounts for 1 of every 6 deaths in the United States.[1] Hypertension—a major risk factor for heart disease, stroke, and kidney disease—affects 1 in 3 Americans, with an estimated annual cost of $156 billion in medical costs, lost productivity, and premature deaths.[2]

NQF's portfolio of 63 cardiovascular measures is one of the largest and most long-standing with measures in the topic areas of primary prevention and screening, coronary artery disease (CAD) or ischemic heart disease (IHD), heart attacks (AMI), percutaneous coronary intervention (PCI), cardiac rehabilitation, cardiac imaging, high blood pressure, heart failure, rhythm disorders and ICDs.

Most recently, the newly-convened Cardiovascular Standing Committee which includes 24 members met during a two-day in-person meeting to evaluate 17 measures: 9 new measures and 8 measures undergoing maintenance of endorsement review against NQF's standard evaluation criteria. Fourteen of the measures were recommended for endorsement by the Committee, and three were not recommended.

Comments Received

NQF solicits comments on measures undergoing review in various ways and at various times throughout the evaluation process. First, NQF solicits comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). Second, NQF solicits member and public comments prior to the evaluation of the measures via an online tool located on the project webpage. Third, NQF opens a 30-day comment period to both members and the public after measures have been evaluated by the full committee and once a report of the proceedings has been drafted.

Pre-evaluation comments

The pre-evaluation comment period was open from February 10, 2014 to February 28, 2014 for the 18 measures under review (one of the 18 measures under review was withdrawn prior to the in-person Standing Committee meeting.) A total of 3 pre-evaluation comments were received, the majority of which pertained to recommendations of harmonization of drug lists in

[1] Lloyd-Jones D, Adams RJ, Brown TM, et al., Heart disease and stroke statistics—2013 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee , Circulation, 2013;127:e6-e10.

[2] "HHS Secretary Sebelius Statement on National High Blood Pressure Education Month." U.S. Department of Health & Human Services (HHS), 2 May 2012. Available at http://www.hhs.gov/news/press/2012pres/05/20120502a.html. Last accessed October 2013.

the cardiovascular measures. All of these pre-evaluation comments were provided to the Committee prior to their initial deliberations held during the workgroups calls.

Post-evaluation comments

The Draft Report was available for Public and Member comment from May 27, 2014 to June 25, 2014. During this commenting period, NQF received 53 comments from ten member organizations:

Consumers – 0	Professional – 3
Purchasers – 0	Health Plans – 2
Providers – 3	QMRI – 0
Supplier and Industry – 2	Public & Community Health - 0

Additionally, comments were received from 12 members of the general public.

A complete table of comments submitted pre- and post-evaluation, along with the responses to each comment and the actions taken by the Standing Committee, is posted to the [link can be found here] project page on the NQF website, along with the measure submission forms.

The Committee reviewed all comments received and considered the pre-meeting comments prior to making an endorsement recommendation. The Committee also responded to all post-evaluation comments. Revisions to the draft report and the accompanying measure specifications are identified as red-lined changes. (Note: Typographical errors and grammatical changes have not been red-lined, to assist in reading.)

Comments and their Disposition

Six major themes were identified in the post-evaluation comments, as follows:

1. Measures for which consensus was not reached by the Committee (measures #2452 and #0643)
2. Costs and burdens to participate in multiple registries multiple
3. Recommendations for improved measures or alternative approaches
4. Harmonization of medications in related measures
5. Age specifications

Theme 1 - Measures for which consensus was not reached by the Committee

2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy (ACC/AHA/PCPI

This new composite measure is the clinician-level version of measure 0964. The only difference in specifications is that this clinician-level measure has additional exceptions for medical reasons, patient reasons and system reasons. Committee members also noted that attribution may be an issue as it is not clear how often the discharge medications are prescribed by the operator doing the PCI, rather than another cardiologist or primary provider. The developers also noted recent attention toward capture of the NPI provider number that had previously been problematic. Committee members were divided on whether to include the clinician-level

of analysis in measure 0964 rather than having a separate measure. The need for complete harmonization was emphasized.

NQF staff and the developers for measures #0964 and #2452 met on June20, 2014 to discuss harmonization and the possibility of combining the two measures into one. A response letter from the developers was submitted [link can be found here] re-iterating their position that the measures are fully harmonized but insist they must remain as separate measures due to issues of measure stewardship. The developers provided an additional document [link can be found here]with a side by side comparison between measures #964 and #2452 that is referenced within the response letter.

Two comments were submitted for the measure:

- A comment from AHIP stated "We recommend revising this process measure to capture if a patient who has undergone a PCI is adherent to these medications, rather than assessing if the medication was prescribed. Data collection for such an outcome measure would be feasible as pharmacy claims could be used to assess P2Y12 agent and statin adherence."
- A comment from AstraZeneca regarding the need for harmonization of drug inclusions in measures 2452, 0964 and 2379. The developers have been asked to respond to the comments.

ACTION TAKEN: The Committee agreed that adherence measures are important. New measure *#2379 Adherence to Anti-platelet Therapy after Stent Implementation* measures adherence for P2Y12 agents. NQF endorsed *measure # 0543 Adherence to Statin Therapy for Individuals with Coronary Artery Disease* addresses adherence to statins in this population. The biggest difficulty is with aspirin which would not be captured.

The Committee reviewed side-by-side specifications for the P2Y12 agents and found them to be the same for all three measures. As the Committee reviews other measures of antiplatelet agents in the cardiovascular portfolio, harmonization of the specified agents will be addressed. The biggest difficulty is with aspirin which would not be captured.

The Committee acknowledged the letter from the measure stewards about combining measures 0964 and 2452. The Committee subsequently voted to recommend the measure.

0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting (American College of Cardiology)

During the initial review the Committee was very supportive of the importance of cardiac rehabilitation, but concern was raised that the specifications of the measure require patients with chronic stable angina to be referred to cardiac rehabilitation annually, which is not supported by the evidence. Additionally, some Committee members voiced concern that providers could be penalized by both this measure and by the companion measure, if a patient is referred to cardiac rehabilitation prior to discharge from an inpatient admission but has not enrolled prior to the outpatient visit with the same provider. The developer proposed revised description to address the Committee concern related to chronic stable angina patients:

"Percentage of patients evaluated in an outpatient setting who in the previous 12 months have experienced an acute myocardial infarction, New or worsening angina that does

not meet criteria for unstable angina (1), or who have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation, who have not already participated in an early outpatient cardiac rehabilitation/secondary prevention program for the qualifying event, and who are referred to an outpatient cardiac rehabilitation/secondary prevention program."

NQF received 13 comments addressing measure 0643:

- Nine comments support the continued endorsement of the measure. Several comments addressed the specific concerns raised by the Committee.
- One comment identified concerns with the "complication of the measure" and that it seems too burdensome for discerning numerator and denominator and lacks strong evidence.
- One recommendation that the measure should capture whether the patient actually received rehabilitation services rather than just the referral – the data can be captured in administrative claims.
- One commenter states that the denominator is incorrect and should state ""Number of patients in an outpatient clinical practice who have had a qualifying cardiovascular event in the previous 12 months and who do not meet any of the criteria listed in the denominator exclusion section below."
- One comment points out that the age inclusions were only noted in the algorithm.

Developer's Response regarding the specifications: The denominator description statement is correct as it is currently written. Patients who have had a qualifying inpatient cardiovascular event and who have already been referred to an outpatient CR program, would not be included in the outpatient measure since they would have already been referred from an inpatient setting. The focus of the referral measure from an outpatient setting is to include those patients who have had a qualifying event, but who have not yet been referred to an outpatient CR program.

ACTION TAKEN: The Committee reviewed the comments and reiterated concerns about outpatient providers being penalized if an inpatient is referred and attends a cardiac rehabilitation program but this is not documented in the outpatient record.

Committee members generally agreed that participation is what is important and involves shared accountability with the patient. The Committee supports moving to outcome measures (participation) and would welcome submission of a participation measure for potential endorsement.

After review of the comments the Committee narrowly voted to recommend the measure for continued endorsement.

Theme 2 Recommendations for improved measures or alternative approaches

AHIP submitted several comments requesting revisions to measures to capture more meaningful information:

- **0642 and 0643: Inpatient/Outpatient referral to cardiac rehabilitation**
  - Assess whether patient received cardiac rehabilitation services rather than just assess whether a referral was made
- **2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI**
  - Measure appropriateness of PCI, not just documentation.
- **2455: Heart Failure: Post-Discharge Appointment for Heart Failure Patients**
  - Capture whether the patient had a follow-up visit, not just the appointment

ACTION TAKEN: The Committee supports moving to outcome measures and would welcome submission of the suggested measures for potential endorsement.

Theme 3 Costs and burden to participate in multiple registries

A commenter noted that the data elements of the NCDR CathPCI registry and the NCDR ACTION registry greatly overlap and that it is costly and burdensome to participate in multiple registries.

Developer's Response: Thank you for your comment. The ACTION Registry-GWTG is designed to capture all patients that present with an MI. The CathPCI Registry does not capture MI patients that may not undergo a diagnostic catheterization or PCI. If the Defect Free Care Composite Measure was applied to the CathPCI Registry, those MI patients that did not undergo at minimum a diagnostic catheterizations or PCI would not be captured. The other issue is that diagnostic catheterizations are optional in the CathPCI Registry. If the site only submits their PCI cases, many MIs will be lost in the measure.

ACTION TAKEN: The Committee agreed that the burden of participating in multiple registries is a significant concern and encouraged developers (particularly ACC that has several registries) to consider the burden since there is a great deal of overlap among registries. Some Committee members noted the evolution in data capture and measurement and a need to develop eMeasures and leverage the use of EHRs.

Theme 4 Harmonization of medications in related measures

AstraZeneca requested harmonization of similar measures, specifically the drugs specifications for oral anti-platelet medications in measures 0964, 2452 and 2479 as well as other measures in the portfolio addressing anti-platelet agents. Side by side of specifications for the three measures:

0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients and 2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy	2379: Adherence to Antiplatelet Therapy after Stent Implantation

P2Y12 agent (clopidogrel, prasurgel, or ~~ticlopidine~~ ticagrelor)**	Clopidogrel, prasurgel, ticagrelor

** During the work group calls the committee and developer agreed that there was a typographical error in the specifications and that ticlopidine should not be included and that ticagrelor should be listed.

ACTION TAKEN: The Committee indicated that the evidence and guidelines for dual antiplatelet agents in patients with coronary artery disease and AMI are the same as for post-PCI. The evidence for post-CABG patients is less clear. As the Committee reviews other measures of antiplatelet agents in the cardiovascular portfolio, harmonization of the specified agents will be addressed.

Theme 5 Age specifications

Several comments from the Children's Hospital Association note lack of specificity with age inclusions for several measures stating "we would like to encourage NQF and the measure developers to standardize the way in which measures are presented with regard to the target population."

ACTION TAKEN: The Committee urged developers to clearly specify age inclusions and include age in the measure description. Additionally, the Committee supports measures to apply to children and adolescents whenever appropriate.

Measure Specific Comments

eMeasure Testing for #2473: Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure

One comment questioned the testing of this new eMeasure noting "there appears to have been no testing or validation of success to the automatic submission of such data. We highly recommend that this process be validated with the EHR vendors and healthcare facilities that will be expected to develop methods for electronic submission. Without this assurance, the collection of this data will become a labor intensive chart abstraction process with manual entry of data."

Developer response: We agree that testing of the data elements within the actual electronic health record is important. To this end, we have tested the feasibility and validity of the data elements across multiple EHR systems. The results of those analyses support the ability of providers to map and extract these data elements from current EHR software systems automatically, consistently, and accurately. CMS plans to test the electronic submission of the data prior to putting the measure into implementation.

ACTION TAKEN: The Committee acknowledged the developer response and continued to recommend the measure

2450: Heart Failure: Symptom and Activity Assessment

Three comments expressed concerns with endorsing this measure:

- The evidence supporting symptom and activity assessment is based only on expert consensus, and there is therefore a lack of data suggesting that better performance would lead to improved patient outcomes.
- This measure only assesses if an activity assessment occurred and it does not capture actions taken based on the survey results. Additionally, not every physician office visit by a patient with heart failure pertains to cardiovascular care, and evaluation of activity level and clinical symptoms may be unnecessary and duplicative.
- The AAFP agrees with the Committee's comments regarding the time to complete the survey as well as literacy levels may be a barrier to successful implementation. The survey may be appropriate for a cardiologist, but the AAFP has concerns about adding another mandate to the already short face-to-face time with patients during a visit.

ACTION TAKEN: The Committee reviewed their prior discussion that focused on the importance of getting physicians to document activity and function which is related to mortality. The Committee and developers acknowledge that the NYHA classification is subjective but clinical trials using it are informative. The developer clarified that the measure is "for patients either in their initial evaluation for heart failure and in every follow-up appointment for heart failure". Committee members suggested that a Patient-reported Outcome measures would be important for these patients.

2459: In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI

Two comments were received:

- Support this patient safety measure.
- Cleveland Clinic expresses concern that patients may be misled by the measure results and perhaps be dissuaded from going to a high quality center. The commenter notes flaws in the measure:
    - Patients undergoing other surgical procedures such as valve surgery, large bore catheter procedures such as TAVR or balloon valvuloplasty, or other major non-CABG surgeries who are also at additional bleeding risk, are currently included in this metric. Our internal data suggests that when we include other major cardiac procedures like valve surgery, Transcatheter Aortic Valve Replacement (TAVR)etc without CABG, bleeding rates are higher therefore negatively impacting the current NCDR PCI bleeding measure which currently does not exclude these other procedures.
    - As large volumes of combined PCI and other non-CABG major cardiac operations tend to be done in institutions and by physicians with particular expertise in specialized cardiac procedures, patients may well get the wrong impression that such providers have high complication rates simply because their procedure mix is more complicated
    - We would like to routine and scientifically acceptable auditing of the data being submitted to assure data validity. We are concerned that the current mechanism of auditing NCDR data is not sufficient to ensure the high level of accuracy needed for national quality reporting or pay for performance metric. If this NCDR data is going to be included in national quality reporting or for pay for performance programs, then the audits should include more sites instead of the current randomly selected 25 sites per year (out of >1,620 participating hospitals) as well as selecting/evaluating all consecutive cases from a specified time period so that sites may not selectively choose the cases that are to be audited. We have concerns that the current auditing methodology is not specifically focused on the components of those metrics (including inclusion and

exclusion criteria) that impact current and proposed NQF quality measures that will be used in national quality reporting and pay for performance programs.

Developer Response: The risk adjustment model employed for this measure has undergone substantial validation to ensure that it accounts for numerous aspects of case mix. More broadly, the measure conforms to the stringent methodology delineated by the ACC and AHA for the development of outcomes measures.

As is the case for all of its measures, the ACC will continue to perform surveillance to ensure that the measures characteristics (inclusions, exclusions, and risk modeling) remain valid and relevant. This will include an assessment of the extent to which the small minority of patients (<1.5%) who undergo major surgery during the episode of care during which their PCI occurred, influences the results of the measure.

The NCDR applies an extensive data quality program that includes but is not limited to an audit. The audit program continues to expand in scope to include additional sites and includes outlier assessment to facilitate targeted audits. Because of the importance of the risk-adjusted outcomes models, the variables underlying all of these models are particularly high-priority candidates for audits.

The comprehensive NCDR data quality program is described in greater detail in Messenger JC, Ho KL, Young CH, et al. The National Cardiovascular Data Registry (NCDR) Data Quality Brief: The NCDR Data Quality Program in 2012. J Am Coll Cardiol. 2012;60(16):1484-1488. doi:10.1016/j.jacc.2012. 07.020.

ACTION TAKEN: The Committee acknowledged the excellent points raised by the comments and noted the good responses by the developer. The Committee supported the developer's plan to consider the concerns raised regarding exclusions within their surveillance of the measure.

2379: Adherence to Antiplatelet Therapy after Stent Implantation

AAFP is concerned about the use of administrative data for compliance noting that "claims data could be troublesome as it will not take into account drug samples, generic prescriptions off the $4 program, or the maneuvering physicians often do to ensure their patient's prescriptions last longer due to the inability to afford their medications."

Developer response: Currently we are not aware of any P2Y12 inhibitors offered as $4 prescriptions. Therefore missing claims from these programs will not affect measure rates. We acknowledge that there may be other sources of missing data (e.g., drug samples) that cannot be accounted for with administrative data; however, at this time, we do not believe that the impact will be significant in overall measure rates, and attempting to capture these data by revising the measure would put an undue burden on providers

ACTION TAKEN: The Committee reviewed the developer response and noted that the measure only applies to patients with drug benefit. During the initial measure evaluation the Committee raised similar concerns and the developer agreed to limit the measure to health plans and ACOs and not at the practice level of analysis. Clinicians noted that samples are much less available now.

0286: Aspirin at Arrival

The Committee rated this measure low on *1b. Opportunity for Improvement* because it is "topped out." The Committee elected not to recommend the measure for Reserve status.

One comment notes that there "may instances where a previously endorsed NQF measure is still needed and in use and removal of the endorsement gives the impression that the measure is no longer credible, reliable or lacks evidence when that may not be the case." Reserve status was created to address this concern.

ACTION TAKEN: The Committee considered the option of reserve status for this measure but ultimately decided not to recommend the Reserve status option. After review of this comment, the Committee further noted that they had concerns about the reliability of capturing the 11 required data elements and specifically identifying patients with "probable chest pain". The developers indicated that they are in the process of re-specifying the measure for EHRs and again noted difficulty with capturing "probable cardiac chest pain." Now that the measure has reached high levels of performance, the Committee did not think the challenges with abstracting the data were outweighed by the benefit and decided the measure did not qualify for Reserve status.

NQF Member Voting

Information for electronic voting has been sent to NQF Member organization primary contacts. Accompanying comments must be submitted via the online voting tool.

Please note that voting concludes on August 5, 2014 at 6:00 pm ET – no exceptions.

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DRAFT REPORT FOR ~~COMMENT~~ NQF MEMBER VOTING

July 22, 2014

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Contents

NQF-endorsed measures for Cardiovascular Conditions: 2014

DRAFT REPORT

Executive Summary

Cardiovascular conditions include various types of heart disease and high blood pressure[1]. Deaths from cardiovascular conditions result from coronary heart disease (48.2%), heart failure (7.3%), high blood pressure (8.0%), disease of the arteries (3.4%), stroke (16.4%) and other (16.7%). Although death rates attributable to cardiovascular disease (CVD) declined by 31% from 2000 to 2010, CVD still accounts for 1 in 3 deaths in Americans.

Currently, NQF's portfolio of Cardiovascular measures include measures for primary prevention and screening, coronary artery disease (CAD) or ischemic heart disease (IHD), heart attacks (AMI), percutaneous coronary intervention (PCI), cardiac rehabilitation, cardiac imaging, high blood pressure, heart failure, rhythm disorders and ICDs. Many of which, are currently being used in public and/or private accountability and quality improvement programs. However, significant gaps remain in the topic area of cardiovascular measurement. There is also a recognized need to harmonize related measures across sites and settings of care.

The Cardiovascular Committee is among the first NQF panels to transition to the use of Standing Committee. The 24-member Cardiovascular Standing Committee will oversee the NQF Cardiovascular measure portfolio, including evaluating both newly-submitted and previously-endorsed measures against NQF's measure evaluation criteria, identifying gaps in the measurement portfolio, providing feedback on how the portfolio should evolve, and serving on any ad hoc or expedited projects in their designated topic areas.

On April 21-22, 2014, the Cardiovascular Standing Committee evaluated 9 new measures and 8 measures undergoing maintenance review against NQF's standard evaluation criteria. ~~Twelve~~ Fourteen of the measures were recommended for endorsement by the Committee and~~,~~ three were not recommended (#0521: Heart Failure Symptoms Assessed and Addressed; #0286: Aspirin at Arrival and #0289: Median Time to ECG)~~.~~, ~~and two did not reach consensus (#2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy and #0643: Cardiac Rehabilitation Patient Referral From an Outpatient Setting).~~ The ~~12~~ 14 measures that were recommended by the Standing Committee are:

- 0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI

[1] Stroke is included in NQF's Neurology portfolio.

- 0535: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
- 0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
- 0642: Cardiac Rehabilitation Patient Referral From an Inpatient Setting
- 0643: Cardiac Rehabilitation Patient Referral From an Outpatient Setting
- 0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
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- 2455: Heart Failure: Post-Discharge Appointment for Heart Failure Patients
- 2459: In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
- 2473: Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
- #2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy

Brief summaries of the measures currently under review are included in the body of this report; detailed summaries of the Committee's discussion and ratings of the criteria are included in Appendix A.

Introduction

Cardiovascular conditions include various types of heart disease and high blood pressure[2]. Although death rates attributable to cardiovascular disease (CVD) declined by 31% from 2000 to 2010, CVD still accounts for 1 in 3 deaths in Americans. The American Heart Association (AHA) has introduced the concept of "cardiovascular health" which encompasses 1) the absence of known CVD; 2) optimal health behaviors (not smoking, sufficient physical activity, healthy diet and normal body weight); and 3) normal values for cholesterol, blood pressure and blood sugar. The AHA has set an Impact Goal for the current decade*: "By 2020, to improve the cardiovascular health of all Americans by 20%, while reducing deaths from CVDs and stroke by 20%."* Deaths from cardiovascular conditions result from coronary heart disease (48.2%), heart failure (7.3%), high blood pressure (8.0%), disease of the arteries (3.4%), stroke (16.4%) and other (16.7%).

Coronary heart disease

When the blood vessels (coronary arteries) supplying the heart with oxygen are compromised or blocked by cholesterol plaques the heart muscle may be damaged– this is called coronary heart disease (CHD). Sudden and significant damage to the heart muscles is called an acute myocardial infarction or heart attack. In 2010, 379, 559 Americans died of CHD (approximately 1 in every 6 deaths). Risk factors for developing CHD include high cholesterol, high blood pressure, diabetes, family history of CHD and smoking. Procedures such as Percutaneous Coronary Intervention (PCI) or "stenting" and coronary artery bypass graft surgery (CABG) are frequently performed to open up the blocked arteries.

Heart failure

Damage to the heart muscle affects the heart's ability to pump blood effectively throughout the body. A damaged heart cannot pump enough blood carrying oxygen and nutrients to meet the body's needs and causes symptoms of excess fluid, shortness of breath, and reduced activity. Heart failure is a chronic progressive disease that affects more than 5 million Americans and is the leading cause of hospitalization in patients over age 65 years.

Heart rhythm disorders

The heart beats in a regular rhythmic fashion due to natural pacemakers in the heart. Damage to the heart can affect these pacemakers and cause abnormal heart rhythms. Atrial fibrillation is the most common heart rhythm disorder and affects 2-6 million people. Some serious rhythm disorders cause the heart to fibrillate or stop beating and devices such as pacemakers and implantable cardioverter devices (ICDs) may be used to treat severe rhythm abnormalities.

High blood pressure (HBP)

High blood pressure is a major risk factor for CVD and stroke. One in 3 Americans has HBP. Data from 2007 to 2010 showed that of those with HBP who were ≥20 years of age, 81.5% were aware of their

[2] Stroke is included in NQF's Neurology portfolio.

condition, 74.9% were under current treatment, 52.5% had their hypertension under control, and 47.5% did not have it controlled. The estimated direct and indirect cost of HBP for 2010 was $46.4 billion. [1]

National Quality Strategy

The National Quality Strategy (NQS) serves as the overarching framework for guiding and aligning public and private efforts across all levels (local, State, and national) to improve the quality of health care in the U.S.[9] The NQS establishes the "triple aim" of better care, affordable care, and healthy people/communities, focusing on six priorities to achieve those aims: *Safety, Person and Family Centered Care, Communication and Care Coordination, Effective Prevention and Treatment of Illness, Best Practices for Healthy Living,* and *Affordable Care*.[10]

Improvement efforts for cardiovascular conditions are consistent with the NQS triple aim and align with several of the NQS priorities, including:

- Effective Prevention and Treatment of Illness, beginning with cardiovascular conditions.
- Communication and Care Coordination. Coordination is a priority because often care for patients with heart disease occurs across provider types (e.g., primary care, cardiologists, imaging, interventionalists) and often require both acute and post-acute care across settings (e.g., emergency department, inpatient facilities, rehabilitation facilities). Also, improving care and care coordination for cardiovascular disease can reduce complications, thus helping to decrease hospital admissions, readmissions and costs.
- Best Practices for Healthy Living. Engagement in healthy behaviors (e.g., weight control, stopping smoking) and accessing preventive services such as screening is critical for both the prevention and management of cardiovascular conditions.

Trends and Performance

The National Healthcare Quality Report (NHQR) and the National Healthcare Disparities Report (NHDR) provide a national view of progress toward the NQS goals and priorities. The most recent reports demonstrate improvement in most areas of cardiovascular care but differences among racial groups remain:

- Blood pressure control: Only 50% of patients have controlled blood pressure. Blacks and Mexican American have lower rates of controlled BP compared to whites.
- Heart attacks: “Significant improvements in process measures of quality of care for heart attack have occurred in recent years. All process measures tracked in past reports have attained overall performance levels exceeding 95% and have been retired.”
- Heart attacks: “From 2001 to 2009, the overall inpatient mortality rate for heart attack decreased significantly for each racial/ethnic and area income group. Since 2004, Blacks have had lower inpatient mortality rates than Whites. In all years, women had higher rates of inpatient heart attack deaths than men and uninsured patients had higher rates than privately insured patients.”
- Hospitalization for heart failure:” From 2004 to 2009, patients ages 45-64 and 65 and over had higher rates of hospitalization for congestive heart failure than patients ages 18-44, and

men had higher rates than women. From 2001 to 2009, the overall hospitalization rate for congestive heart failure decreased significantly overall and for each racial/ethnic and area income group. In all years, Blacks had higher rates of admission for congestive heart failure compared with Whites while Asian Pacific Islanders had lower rates."

Cardiovascular Measure Evaluation: Refining the Evaluation Process

Several changes to the Consensus Development Process (CDP)—transitioning to Standing Steering Committees and committee voting—have been incorporated into the ongoing maintenance activities for the Cardiovascular portfolio. These changes are described below.

Standing Steering Committee

In an effort to remain responsive to its stakeholders' needs, NQF is constantly working to improve the CDP. Volunteer, multi-stakeholder steering committees are the central component to the endorsement process, and the success of the CDP projects is due in large part to the participation of its Steering Committee members. In the past, NQF initiated the Steering Committee nominations process and seated new project-specific Committees only when funding for a particular project had been secured. Seating new Committees with each project not only lengthened the project timeline, but also resulted in a loss of process continuity and consistency because committee membership changed—often quite substantially—over time.

To address these issues in the CDP, NQF is beginning to transition to the use of Standing Steering Committees for various topic areas. These Standing Committees will oversee the various measure portfolios; this oversight function will include evaluating both newly-submitted and previously-endorsed measures against NQF's measure evaluation criteria, identifying gaps in the measurement portfolio, providing feedback on how the portfolio should evolve, and serving on any ad hoc or expedited projects in their designated topic areas.

The Cardiovascular Standing Committee currently includes 24 members (see Appendix D). Each member has been randomly appointed to serve an initial two- or three- year term, after which he/she may serve a subsequent 3-year term if desired.

Voting by the Standing Committee

In response to stakeholder questions about determining consensus, in 2012 NQF established a Task Force to re-consider methods of voting throughout the CDP to determine consensus. The Task Force recommended a change from simple majority approval to the following:

> A measure is recommended for endorsement by the Standing Committee when the vote margin on all major criteria (Importance, Scientific Acceptability) and overall is greater than 60% of voting members in favor of endorsement. A measure is not recommended for endorsement when the vote margin on any major criteria or overall is less than 40% of voting members in favor of endorsement. The Standing Committee has not reached consensus if the vote margin on any major criterion or overall is between 40%-60% in favor of endorsement.

When the Standing Committee has not reached consensus, all measures for which consensus was not reached will be put out for NQF Member and public comment. The Standing Committee will consider the comments and re-vote on measures where consensus was not reached. After the re-vote, all measures that are recommended (>60% in favor of endorsement) by the Standing Committee or where consensus has not been reached (between 40%-60% in favor of endorsement) will be put out for NQF Member vote.

NQF Portfolio of performance measures for Cardiovascular conditions

NQF's portfolio of cardiovascular measures (Appendix B) is one of the largest. Currently, NQF's portfolio of Cardiovascular measures includes measures for primary prevention and screening, coronary artery disease (CAD) or ischemic heart disease (IHD), heart attacks (AMI), percutaneous coronary intervention (PCI), cardiac rehabilitation, cardiac imaging, high blood pressure, heart failure, rhythm disorders and ICDs. The portfolio contains 63 measures: 42 process measures, 19 outcome and resource use measures, and 2 composite measures. Nine of these measures will be evaluated by the Cardiovascular Standing Committee.

NQF Cardiovascular Portfolio of Measures

	Process	Outcome/Resource Use	Composite
Primary prevention and screening	3	1	
CAD/IHD	7	5	
AMI	14	1	
PCI	1	4	1
Heart failure	6	2	
Rhythm disorders	4		
ICDs	3		1
Cardiac imaging		4	
Cardiac Rehab	2		
Cardiac Catheterization		2	
High blood pressure	2		
Total	**42**	**19**	**2**

Twenty six measures have been assigned, for various reasons, to other projects. These include readmissions for AMI and heart failure (Readmissions project), measures for coronary artery bypass graft (CABG) (Surgery project), cost and resource use measures (Resource use project) and primary prevention (Health and Well-being project.)

Endorsement of measures by NQF is valued not only because the evaluation process itself is both rigorous and transparent, but also because evaluations are conducted by multi-stakeholder Committees comprised of clinicians and other experts from hospitals and other healthcare providers, employers, health plans, public agencies, community coalitions, and patients –many of whom use measures on a daily basis to ensure better care. Moreover, NQF-endorsed measures undergo routine "maintenance" (I.e., periodic re-evaluation) to ensure that they are still the best-available measures and reflect the current science. Importantly, legislative mandate requires that preference be given to NQF-endorsed measures for use in federal public reporting and performance –based payment programs. NQF measures also are used by a variety of stakeholders in the private sector, including hospitals, health plans and communities.

Overtime, and for various reasons, some previously-endorsed cardiovascular measures have been dropped from the full NQF portfolio. Measure stewards may retire measures or decide not to maintain NQF endorsement. Measures may lose endorsement upon maintenance review. Loss of endorsement can occur for many different reasons including – but not limited to – a change in evidence without an associated change in specifications, high performance on a measures signifying no further opportunity for improvement, discovery of unintended consequences of using the measure, and endorsement of a superior measure.

A large part of the cardiovascular portfolio is organized according to NQF's Episode of Care model (for coronary artery disease/AMI and heart failure). This patient-centric framework, which is broadly applicable to both acute and chronic conditions, can be used to map existing performance measures and highlight gaps in measurement.

The model for Acute Myocardial Infarction (AMI) was developed in 2009 by a panel of experts in healthcare and measurement in an effort to propose a responsible evaluation of a healthcare delivery system to consider the efficiency with which each patient with an AMI received care and the frequency with which AMI occurred in the community. The Committee defined four distinct phases of the care of patients with AMI: the population at risk, acute care, post-acute care/rehabilitation, and secondary prevention. The NQF Cardiovascular portfolio has measures applicable to all four phases.

NQF staff applied the Episode of Care model to heart failure as part of the current Cardiovascular endorsement maintenance work. In this draft framework (Appendix A) two trajectories are described: one reflecting ongoing management of mild, relatively stable heart failure and 2) severe and deteriorating disease leading to end-of-life care.

Use of measures in the portfolio

Some of the cardiovascular measures are among the most long-standing measures in NQF's portfolio. NQF-endorsed hospital-level measures for AMI and heart failure are publicly reported on the Hospital Compare website and by the Joint Commission on their Quality Check website. In March 2012, CMS published the *National Impact Assessment of Medicare Quality Measures* that reported trend data for NQF-endorsed measures used by Medicare.

Improving NQF's Cardiovascular Portfolio

Committee input on gaps in the portfolio

Prior to evaluating the measures under review, NQF staff described the Cardiovascular portfolio, the framework for organizing the large group of measures, and solicited input from the Committee on the framework and gap areas in the portfolio. During their discussions, the Committee identified several areas where additional measure development is needed, including:

- measures of cardiometabolic risk factors;
- patient reported outcome measures for heart failure symptoms and activity assessment;
- composite measures for heart failure care;
- "episode of care" composite measure for AMI that includes outcome as well as process measures;
- Consideration of socioeconomic determinants of health and disparities; and
- global measure of cardiovascular care.

The Committee supported a commenter who suggested measures closer to outcomes such as medication adherence rather than a prescription; attending cardiac rehabilitation rather than making a referral; a patient being seen by a provider after hospitalization rather than making an appointment; and measures of appropriateness rather than documentation.

The Committee also noted that the large number of measures in this topic area requires greater attention to harmonization of related measures, and consolidation of measures whenever possible. Some measures that have been in use for several years have been successful in reaching high levels of performance and are now "topped-out" with little further room for improvement.

The Committee acknowledged the evolution of measurement and data systems from paper charts to claims to registries and encourages further development of eMeasures to leverage the use of electronic health records (EHRs).

Measures in the "pipeline"

NQF recently launched a *Measure Inventory Pipeline*—a virtual space for developers to share information on measure development activities. Developers can use the Pipeline to display data on current and planned measure development and to share successes and challenges. Information shared via the Pipeline is available in real time and can be revised at any time. NQF expects that developers will use the Pipeline as a tool to connect to, and collaborate with, their peers on measurement development ideas.

Cardiovascular Measure Evaluation

On April 21-22, 2014 the Cardiovascular Standing Committee evaluated 9 new measures and 9 measures undergoing maintenance review against NQF's standard evaluation criteria. To facilitate the evaluation, the Committee and candidate standards were divided into four workgroups for preliminary review of

the measures against the evaluation sub-criteria prior to consideration by the entire Standing Committee. The Committee's discussion and ratings of the criteria are summarized in the evaluation tables beginning on page 24.

Cardiovascular Measure Review Summary

	Maintenance	New	Total
Measures under consideration	9	8	17
Measures withdrawn from consideration	5	1	6
Measures recommended	~~5~~6	~~7~~8	~~12~~14
Measures recommended with reserve status			
Measures where consensus is not yet reached	~~1~~0	~~1~~0	~~2~~0
Measures not recommended	3		3
Reasons for not recommending	Importance – 3		

Comments Received Prior to Committee Evaluation

NQF solicits comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). In addition, NQF has begun soliciting comments prior to the evaluation of the measures via an online tool located on the project webpage. For this evaluation cycle, the pre-evaluation comment period was open from February 10th – February 28th for the measures under review. All submitted comments were provided to the Committee prior to their initial deliberations held during the workgroups calls.

A total of 3 pre-evaluation comments were received (see Appendix E). All three comments were provided from the supplier/industry councils. Much of the commentary noted the need for harmonization efforts with competing and related measures, in particular measures #0964 and #2379. Additionally, the comments documented concerns with inconsistencies in measure specifications, such as lack of currency or comprehensiveness of relevant medication lists.

Overarching Issues

During the Standing Committee's discussion of the measures, several overarching issues emerged that were factored into the Committee's ratings and recommendations for multiple measures and are not repeated in detail with each individual measure:

Harmonization

Because many cardiovascular measures are in use, harmonization of measures is a critical aspect of the evaluation, particularly for similar measures at different levels of analysis or similar measures specified for different settings of care. The Committee raised the issue of harmonization within the cardiovascular portfolio as well as harmonization with measures in other topic areas as a major priority.

Reporting reliability testing results

Committee members requested greater information on reliability results, in particular when inter-rater reliability is used to demonstrate reliability of the measure. The Committee requested that developers provide information on percent agreement between the abstractors in addition to the correlation scores, in order to ascertain whether abstraction of the data elements to compute the measure score was consistent between the abstractors.

Simple measures as a starting point for measurement

Several measures evaluated were rather basic process measures of referral or documentation that were justified as necessary to begin measurement within a specific care process or condition, allow for initial collection of data, and then should be replaced with measures more proximal to outcomes.

Summary of Measure Evaluation

The following brief summaries of the measures and the evaluation highlight the major issues that were considered by the Committee. Details of the Committee's discussion and ratings of the criteria are included in Appendix E.

Percutaneous Coronary Intervention (PCI)

Four new measures and four NQF-endorsed measures addressing PCI were reviewed. Six of eight measures were recommended for endorsement; one measure was not recommended for endorsement and for one measure consensus was not reached by the Committee. The data source for these seven measures is the American College of Cardiology's National Cardiology Registry - CathPCI. According to the developers, more than 90% of PCI procedures are entered into this database.

2411 Percutaneous Coronary Intervention (PCI): Comprehensive documentation of Indications for PCI (American College of Cardiology (ACC)): Recommended

Description: *Percentage of patients, aged 18 years and older, for whom percutaneous coronary intervention (PCI) is performed with comprehensive documentation for the procedure that includes, at a minimum, the following elements: priority (acute coronary syndrome, urgent, elective, emergency/salvage); presence and severity of angina symptoms; use of antianginal medical therapies within two weeks prior to the procedure, if any; presence, results, and timing of non-invasive stress test, fractional flow reserve (FFR), or intravascular ultrasound (IVUS), if performed; and significance of angiographic stenosis (may be quantitative or qualitative) on coronary angiography for treated lesion.* ***Measure Type:*** *Process;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility* ***Data Source:*** *Registry*

This new measure, which is currently being used for quality improvement with benchmarking, assesses whether the patient information submitted to the CathPCI registry has sufficient information to determine whether the indications for PCI map to one of the 180 scenarios that defines the ACC appropriate use criteria for PCI. Currently, about 40% of patient information is inadequate to determine appropriateness, demonstrating a significant opportunity for improvement. The Committee stated that, given the 1.2% mortality rate associated with PCI and the high cost of the procedure, inappropriate PCI should be avoided whenever possible. This measure was seen as a first step toward avoiding unnecessary PCI.

2459 In-hospital Risk-Adjusted Rate of Bleeding Events for patients undergoing PCI (ACC): Recommended

Description: *Risk adjusted rate of intra and post procedure bleeding for all patients age 18 and over undergoing PCI****; Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility* ***Data Source:*** *Registry*

This new risk-adjusted outcome measure, which is currently being used for quality improvement with benchmarking, captures any of four types of bleeding complications associated with PCI: a bleeding event within 2 hours; hemorrhagic stroke; tamponade; or post-PCI transfusion. Data from more than 600,000 registry patients found a mean performance result of 5.7% in 2011 and 5.5% in 2012. Committee members questioned the exclusion of patients with same day death or pre-procedure low hemoglobin since the measure could risk adjust for anemia. The Committee also suggested that the data should be stratified by gender, since that is a significant risk factor for bleeding. Results of empiric reliability testing of the measure score were high (0.89) though reliability was somewhat low for some data elements. Committee members suggested that bleeding rates and severity may be downgraded when entered into registry.

0133 In-hospital Risk-Adjusted Rate of Mortality for Patients Undergoing PCI (ACC): Recommended

Description: *Risk adjusted rate of mortality for all patients age 18 and over undergoing PCI.* ***Measure type:*** *Outcome;* ***Level of Analysis:*** *Facility****; Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Registry*

This outcome measure has been endorsed since 2007 and is publicly reported in the Blue Distinction Centers for Cardiac Care program. This measure may be included in ACC's voluntary reporting website CardioSmart in the future. The 2012 measure results for the 1367 registry participants (reporting on 627,422 patients) range from 0.85% to 2.8% with a mean adjusted mortality of 1.8%. The Committee found the testing to demonstrate strong reliability and validity. The statistical performance of the risk model is also quite high. Two additional mortality measures (0535 and 0536) are discussed below.

0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock (ACC): Recommended and paired with measure 0536

Description: *This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older without STEMI and without cardiogenic shock at the time of procedure. The measure uses clinical data available*

*in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients**; Measure Type:** Outcome; **Level of Analysis:** Facility; **Setting of Care:** Hospital/Acute Care Facility**; Data Source:** Registry*

This is one of two measures for 30-day AMI mortality. The measure is not currently in use; however, there are plans for reporting the measure on the NCDR website within the next two years. This measure assesses mortality for patients with less severe myocardial damage (no STEMI or shock). The Committee noted the narrow range of results reported by the developers for 2010-2011 development dataset: 1.0% to 4.2% (mean=1.8%). NCDR CathPCI registry collects only inpatient data and outcomes -data on mortality after hospitalization comes from CMS data for patients age >65 years. Committee members suggested that the risk adjustment might not be generalizable for patients age <65 since they do not have post-hospitalization mortality data for these patients. This measure is risk-adjusted using a hierarchical logistic regression model with 16 risk factors. Several risk factors – left ventricular ejection fracture (LVEF), glomerular filtration rate (GFR), and body mass index (BMI)-were frequently noted to be non-randomly missing. Results of reliability testing for the measure score were fair. Committee members noted that excluding hospitals with <25 PCI cases may remove the sites in which quality is a concern. Auditing is conducted on only 10% cases from 5% of hospitals.

0536 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock (ACC): Recommended and paired with measure 0535

***Description:** This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older with STEMI or cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development, the measure cohort was derived in a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients; **Measure type:** Outcome**; Level of Analysis:** Facility**; Setting of Care:** Hospital/Acute Care Facility**; Data Source:** Registry*

This is the second of two measures for 30-day AMI mortality. The measure is not currently in use; however, there are plans for reporting the measure on the NCDR website within the next two years. This measure assesses mortality for patients with more severe myocardial damage (STEMI or shock). The Committee noted the broader range (as compared to the companion measure) of results reported by the developers for 2010-2011 development dataset: 10.8% to 14.4% (mean=12.6%), acknowledging that this measure captures sicker patients and thus a higher mortality rate is to be expected. NCDR CathPCI registry collects only inpatient data and outcomes -data on mortality after hospitalization comes from CMS for patients age >65 years. Committee members suggested that the risk adjustment might not be generalizable for patients age <65 since they do not have post-hospitalization mortality data for these patients. This measure is risk-adjusted using a hierarchical logistic regression model with 16 risk factors. Results of reliability testing for the measure score were fair.

0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients (ACC): Recommended

Description: *Patients undergoing PCI who receive prescriptions for all medications (aspirin, P2Y12 and statins) for which they are eligible for at discharge;* ***Measure Type:*** *Composite;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Registry*

This all-or-none composite measure assesses whether a patient was prescribed three medications after PCI. Strong evidence supports use of aspirin and anti-platelet agents to reduce the risk of clot formation in the stent and statins as secondary prevention for CAD. Registry data for 2011-2012 found the median hospital performance (1.2 million patients in 1386 hospitals) was 88.6%. Empiric testing of the measures score demonstrates good reliability (0.82). Only face validity was assessed. This measure is currently used in the "Blue Distinction Centers for Cardiac Care" - a national designation program that recognizes hospitals that demonstrate expertise in delivering quality specialty care, safely and effectively. The developers note that improvement was seen from 2009 to 2011 particularly for the hospitals below the median that improved significantly.

2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy (ACC/AHA/PCPI): ~~Consensus Not Reached~~ Recommended

Description: *Percentage of patients aged 18 years and older for whom PCI is performed who are prescribed optimal medical therapy at discharge****;*** ***Measure Type:*** *Composite;* ***Level of Analysis:*** *Individual Clinician;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Registry*

This new composite measure is the clinician-level version of measure 0964. The composite performance mean was relatively high at 88.29% - individual components of the composite score were all above 90% with statins having the lowest score at 92.18%. The only difference in specifications is that this clinician-level measure has additional exceptions for medical reasons, patient reasons and system reasons. Committee member also noted that attribution may be an issue as it is not clear how often the discharge medications are prescribed by the operator doing the PCI, rather than another cardiologist or primary provider. Committee members were divided on whether to include the clinician-level of analysis in measure 0964 rather than having a separate measure. The need for complete harmonization was emphasized. In subsequent discussion, the measure stewards reiterated their position that the measures are fully harmonized but insist they must remain as separate measures due to issues of measure stewardship. The Committee accepted this explanation.

2379 Adherence to Antiplatelet Therapy after Stent Implantation (CMS): Recommended

Description: *Average proportion of days covered (PDC) for individuals with antiplatelet therapy during the 12 months following implantation of a coronary artery drug-eluting stent (DES) or a bare-metal stent (BMS);* ***Measure Type:*** *Process;* ***Level of Analysis:*** *Clinician: Group/Practice , Health Plan and Integrated Delivery System;* ***Setting of Care:*** *Ambulatory Care : Clinician Office/Clinic;* ***Data Source:*** *Administrative claims*

This new process measure uses proportion of days covered for antiplatelet therapy as a proxy for patient adherence to the antiplatelet therapy medications for patients who have undergone implantation of coronary artery drug-eluting stent (DES) regardless of indication or a bare-metal stent

(BMS) for acute coronary syndrome (ACS). The measure was initially specified to include all patients receiving a bare-metal stent; however, during the Committee review at the in-person meeting, concern was raised that antiplatelet therapy is contraindicated for patients receiving a bare-metal stent for a non-acute coronary syndrome indication. The Committee requested that the developer modify the measure to exclude this population; this change was made and reviewed by the Committee during the May 5th post-meeting call. The Committee found the revised measure specifications acceptable, noting that mean performance on the revised measure remained close to 78%, and the measure was demonstrated to be both reliable and valid.

Acute Myocardial Infarction (Heart Attack)

Two endorsed process measures, a new composite measure and a new eMeasure for 30-day mortality were reviewed.

0286 Aspirin at Arrival (Centers for Medicare & Medicaid): Not Recommended

Description: *Percentage of emergency department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) without aspirin contraindications who received aspirin within 24 hours before ED arrival or prior to transfer****; Measure Type:*** *Process;* ***Level of Analysis:*** *Facility, Population : National;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records*

This measure for AMI patients being transferred for care is reported in CMS's Outpatient Quality Reporting program. National average performance rate is 96.4% which is not as high as the patients that are not transferred displaying minimal opportunity for improvement. The analogous hospital-level measure (NQF #0132) was also retired by CMS after becoming topped out. The Committee considered the option of reserve status for this measure but ultimately decided against Reserve status noting that they had concerns about the reliability of capturing the 11 required data elements and specifically identifying patients with "probable chest pain". The developers indicated that they are in the process of re-specifying the measure for EHRs and again noted difficulty with capturing "probable cardiac chest pain."

0289 Median Time to ECG (CMS): Not Recommended

Description: *Median time from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain)****.; Measure Type:*** *Efficiency;* ***Level of Analysis:*** *Facility, Population: National ;* ***Setting of Care:*** *Paragraph style: Normal by default;* ***Data Source:*** *Administrative claims, Electronic Clinical Data : Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records*

This process measure has been NQF endorsed since 2007 and has been in use for public reporting, payment, regulatory and accreditation programs, and quality improvement with benchmarking. This measure captures time from emergency department arrival to ECG for patients with chest pain who are ultimately transferred to another hospital. The Committee stated that there is no evidence indicating that knowing the door to ECG time improves outcomes, particularly given that door to balloon time for

STEMI patients is already being measured. This measure is more distal to the outcome of treatment for STEMI patients; as such, the Committee did not find it to be necessary to endorse this measure, and consequently devote resources to calculating this measure, when the outcome measure is already available and in use.

2377 Defect Free Care for AMI (ACC): Recommended

Description: *The proportion of acute MI patients >= 18 years of age that receive "perfect care" based upon their eligibility for each performance measures* ***Measure Type:*** *composite;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Facility;* ***Data Source:*** *ACTION Registry- GWTG of the National Cardiovascular Data Registry of the American College of Cardiology*

This new all-or-none composite measures captures 11 processes of care for patients with AMI. All components are related to NQF-endorsed measures that have evidence of reducing morbidity and mortality for patients with AMI. For 558 facilities in the registry the mean performance result is 59% and the median is 66%. Reliability testing of the measure score was high (0.97); only face validity was assessed. This measure is being used for Professional Certification or Recognition with AR-GWTG program. ACC plans to publicly report the measure.

2473 Hospital 30-day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure (CMS): Recommended

Description: *This measure estimates hospital 30-day risk-standardized mortality rates following admission for AMI using clinical information collected at presentation in an electronic health record (EHR). Mortality is defined as death from any cause within 30 days of the index admission date****; Measure Type:*** *Outcome;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Administrative claims, Electronic Clinical Data, Electronic Clinical Data: Electronic Health Record, Electronic Clinical Data: Laboratory, Other*

This de novo eMeasure captures the outcome of risk-standardized patient mortality rate following admission to a hospital for acute myocardial infarction, using clinical information extracted from an electronic health record (EHR). The Committee acknowledged that AMI mortality is high priority in terms of prevalence, severity, and cost, noting that a significant opportunity for improvement on this measure exists, as mean performance is 10.8%. The Committee noted that there is already a claims-based measure capturing this outcome; however, CMS clarified that the intention is to move from claims-based measures to EHR measures, with an expectation that there will be a transitional period of overlap where both measures are in use. The Committee found the reliability and validity of the measure to be acceptable, though for improved ability to compare across hospitals, the Committee recommended that the developer look to implement standard thresholds for evaluating data values rather than allow hospitals to determine these thresholds.

Cardiac Rehabilitation

Two endorsed process measures were reviewed for maintenance of endorsement.

0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting (American College of Cardiology: Recommended

Description: *Percentage of patients admitted to a hospital with a primary diagnosis of an acute myocardial infarction or chronic stable angina or who during hospitalization have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation who are referred to an early outpatient cardiac rehabilitation/secondary prevention program****; Measure Type:*** *Process;* ***Level of Analysis:*** *Clinician : Individual, Facility, Integrated Delivery System;* ***Setting of Care:*** *Hospital/Acute Care Facility, Post-Acute/Long Term Care Facility : Inpatient Rehabilitation Facility;* ***Data Source:*** *Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry*

This process measure has been NQF-endorsed since 2010 and has been in use in a professional recognition program as well as for quality improvement with benchmarking; the developer indicates plans for use for public reporting. The measure captures patients who are admitted to a hospital for several cardiac conditions or procedures who are referred to an outpatient cardiac rehabilitation facility prior to discharge from the hospital. Measure 0643 is the companion measure which captures referrals given to patients during outpatient visits for the same cardiac conditions or procedures. The Committee was very supportive of the importance of cardiac rehabilitation for this subset of patients and noted that multiple studies have shown reduction in both total and cardiac mortality in CHD patients after cardiac rehabilitation. As mean performance on the measure is 59% using the Cath PCI registry and 67% from the ACTION-Registry, there is significant opportunity for improvement. The Committee recommended that in the future the developer strengthen the measure by coupling referral with counseling the patient about the value of cardiac rehabilitation.

0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting (American College of Cardiology): ~~Consensus Not Reached~~Recommended

Description: *Percentage of patients evaluated in an outpatient setting who in the previous 12 months have experienced an acute myocardial infarction or chronic stable angina or who have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation, who have not already participated in an early outpatient cardiac rehabilitation/secondary prevention program for the qualifying event, and who are referred to an outpatient cardiac rehabilitation/secondary prevention program****; Measure Type:*** *Process;* ***Level of Analysis:*** *Clinician : Group/Practice, Clinician : Individual, Integrated Delivery System, Clinician : Team;* ***Setting of Care:*** *Ambulatory Care : Clinician Office/Clinic;* ***Data Source:*** *Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry*

This process measure has been NQF-endorsed since 2010 and has been in use in a professional recognition program as well as for quality improvement with benchmarking; the developer indicates plans for use for public reporting. The measure is the companion to measure 0642 and captures referrals for cardiac rehabilitation given to patients during outpatient visits for the several cardiac conditions or procedures. While the Committee was very supportive of the importance of cardiac rehabilitation for this subset of patients, concern was raised that the specifications of the measure require patients with chronic stable angina to be referred to cardiac rehabilitation annually, which is not supported by the evidence. Additionally, some Committee members voiced concern that providers could be penalized by both this measure and by the companion measure, if a patient is referred to

cardiac rehabilitation prior to discharge from an inpatient admission but has not enrolled prior to the outpatient visit with the same provider. The developer proposed an amendment to address the Committee concern related to chronic stable angina patients; however, upon review during the post-meeting call on May 5th, the Committee members were divided on whether this measure is suitable for NQF-endorsement. After review of the comments submitted in support of this measure, the Committee voted to recommend the measure for continued endorsement.

Heart Failure

Two new process measures and one endorsed measure were reviewed.

2439 Post-Discharge Appointment for Heart Failure Patients (ACC): Recommended

Description: *Patients for whom a follow-up appointment, including location, date, and time, for an office or home health visit for management of heart failure was scheduled within 7 days post-discharge and documented.****; Measure Type:*** *Process;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Hospital/Acute Care Facility;* ***Data Source:*** *Electronic Clinical Data : Electronic Health Record, Paper Medical Records*

Committee members acknowledged the importance of follow-up after hospitalization for heart failure even though this measure does not specify a time frame. This measure uses data from the ACTION Get With the Guidelines registry that captures data from 541 hospitals for patients seen for inpatient or observation service. Mean performance results for 2012 were 45%. Committee members suggested that all ED visits and sub-acute facility service should be included also.

0521 Heart Failure Symptoms Assessed and Addressed (CMS): Not Recommended

Description: *Percentage of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure, and appropriate actions were taken when the patient exhibited symptoms of heart failure;* ***Measure Type:*** *Process;* ***Level of Analysis:*** *Facility;* ***Setting of Care:*** *Home Health;* ***Data Source:*** *Electronic Clinical Data : Electronic Clinical Data*

This process measure has been NQF-endorsed since 2009 and has been in use for public reporting on Home Health Compare. The measure is collected using the Home Health OASIS tool and captures the percentage of heart failure patients whose heart failure symptoms were assessed and addressed during a visit. The Committee found the evidence presented to be weak and not demonstrative of a link between performing this measure and improved outcomes.

2450 Heart Failure: Symptom and Activity Assessment (ACC): Recommended

Description: *Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented****; Measure Type:*** *Process;* ***Level of Analysis:*** *Clinician : Individual;* ***Setting of Care:*** *Ambulatory Care : Clinician Office/Clinic, Ambulatory Care : Outpatient Rehabilitation , Home Health , Post-Acute/Long Term Care Facility : Nursing, Post-Acute/Long Term Care Facility : Inpatient Rehabilitation Facility ;* ***Data Source:*** *Registry*

This measure uses data from NCDR® PINNACLE Registry™ to determine whether heart failure patients are evaluated with a quantitative assessment of activity and symptoms at every visit. Four tools are

acceptable to meet the measure: NY Heart Association classification, Kansas City Cardiomyopathy Questionnaire, Minnesota Living with Heart Failure Questionnaire, Chronic Heart Failure Questionnaire. Performance of over 1200 providers in the registry was 36.8% in 2011 and 35.3% in 2012. Committee members noted that patient surveys take approximately 8 minutes per patient to complete and language/literacy may be barriers. Some Committee members noted that this measure only captures that the assessment occurred, and it does not capture the results of the survey nor any action taken based on the information.

Comments Received After the Committee Evaluation

NQF received 53 comments from NQF Members and the general public. The comments addressed several general topics and several measure specific issues:

- In general commenters suggested a need for specifying age inclusions in the measure descriptions, harmonization of medications in related measures, and the costs and burden to participate in multiple registries;
- Commenters suggested revising some of the process measures to capture outcomes, or processes more proximal to outcomes, such as adherence rather than prescription of medication, attendance at cardiac rehabilitation rather than referral, measures of appropriateness rather than documentation and patient having a post-hospital evaluation rather than making an appointment;
- Many commenters supported continued endorsement for measures of referral to cardiac rehabilitation;
- Several commenters provided commentary on measure ***2450: Heart Failure: Symptom and Activity Assessment***
  - commenters questioned the level of evidence supporting the intervention;
  - raised concern that the measure does not capture actions in response to the patient assessment; and ,
  - stated concern that the provider burden for measure may be significant
- Commenters expressed concerns with exclusions and auditing for measure ***2459: In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI.***

Measure withdrawn by the developer from further consideration of endorsement

The following measures were withdrawn during the measure evaluation period

Measure	Measure Steward	Reason for withdrawal
2458: Heart Failure (HF)- Left Ventricular Function (LVF) Testing	Centers for Medicare and Medicaid services	Developer reviewed related and competing NQF-endorsed measures (#0079 and #0135) and determined the endorsed measures already reached the PQRS goal of meeting the needs of Eligible Providers to

		promote reporting and quality information, therefore an additional measure is not needed.

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Appendix A: Details of Measure Evaluation

Measures recommended

~~Measures where consensus is not yet reached~~

Measures not recommended

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Measures withdrawn from consideration

Measures Recommended

Rating Scale: H=High; M=Moderate; L=Low; I=Insufficient; NA=Not Applicable; Y=Yes; N=No

0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI

Submission | Specifications

Description: Risk adjusted rate of mortality for all patients age 18 and over undergoing PCI.

Numerator Statement: Patients 18 years of age and older with a PCI procedure performed during admission who expired

Denominator Statement: Patients 18 years of age and older with a PCI procedure performed during admission

Exclusions: 1. NCDR Registry patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admission);

2. Patient admissions with PCI who transferred to another facility on discharge

Adjustment/Stratification: Risk Adjusted

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-21**; **N-0**; 1b. Performance Gap: **H-11**; **M-8**; **L-2**; **I-0;** 1c. Impact: **H-20**; **M-0**; **L-1**; **I-0**

Rationale:

- The Committee acknowledged the importance of this outcome measure, noting that the importance of understanding mortality rates as a result of performance of a PCI procedure is self-evident.
- Data presented by the developer showed significant variability in PCI mortality across hospitals with the top hospitals performing the 10th percentile (0.7) and the low performing hospitals at the 90th percentile (2.7). Committee members concluded there is a strong performance gap and opportunity for improvement.
- Some Committee members suggested the developers should present the data trends for the measure for tracking performance improvement over time.
- Committee members agreed that the measure is high impact, as CAD and acute MI are major causes of morbidity and mortality associated with high health expenditures in the U.S.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-11**; **M-11**; **L-0**; **I-0** 2b. Validity: **H-11**; **M-11**; **L-0**; **I-0**

Rationale:

- The Committee agreed that the reliability and validity testing were sufficient to meet the criteria.
- Reliability testing was conducted at the measure score level and data element. For the performance measure level, the developers conducted a signal-to-noise reliability test with the overall score being 0.7 or greater. Some Committee members raised concerns that the testing was more acceptable for high volume hospitals when comparing high volume centers to low volume centers. Data element testing was

0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
conducted using a test-retest approach with misclassification at a low <3.5% across all centers. • Empirical validity testing was not conducted; the developers felt it was not necessary other than to establish content validity of the model, as mortality is of unquestioned importance and readily assessed. • Face validity was systematically assessed through an NCDR expert panel to establish agreement that the measure's performance measure score could be used to distinguish quality.
3. Feasibility: H-18; M-4; L-0; I-X0 *(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)* Rationale: • The Committee agreed the measure is feasible to implement, as the measure has already been in use and collected via registry with a good track record. • The Committee expressed concerns related to the cost of the registry and limited EMR extraction capabilities for the data elements of the measure.
4. Use and Usability: H-19; M-3; L-0; I-0 *(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)* Rationale: • The measure is currently not publicly reported, however, it is being used as a feedback mechanism for performance at participating hospital sites within the CathPCI Registry. • The Committee acknowledged that although performance has improved overtime, there has been little improvement in performance of the measure in the past two years from 2011 and 2012.
5. Related and Competing Measures • This measure directly competes with: o 0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock) o 0536 (30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock).
Standing Committee Recommendation for Endorsement: **Y-22**; **N-0**
6. Public and Member Comment: May 27, 2014- June 25, 2014 • There were no public or member comments received for this measure.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock

Submission | Specifications

Description: This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older without STEMI and without cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients.

Numerator Statement: The outcome for this measure is all–cause death within 30 days following a PCI procedure in patients without STEMI and without cardiogenic shock at the time of the procedure.

Denominator Statement: The target population for this measure includes inpatient and outpatient hospital stays with a PCI procedure for patients at least 18 years of age, without STEMI and without cardiogenic shock at the time of procedure, including outpatient and observation stay patients who have undergone PCI but have not been admitted.

Exclusions: Hospital stays are excluded from the cohort if they meet any of the following criteria:

(1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer).

This exclusion is applied in order to avoid assigning the death to two separate admissions.

(2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI);

(3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures.

(4) PCIs for patients with more than 10 days between date of admission and date of PCI. Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.

Adjustment/Stratification: Risk Adjusted

Level of Analysis: Facility, Population : National

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims, Other, Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-18**; **N-1**; 1b. Performance Gap: **H-8**; **M-6**; **L-5**; **I-2;** 1c. Impact: **H-15**; **M-3**; **L-2**; **I-1**

Rationale:

- The Committee acknowledged the importance of this outcome measure, noting that the importance of understanding mortality rates as a result of performance of a PCI procedure for non-STEMI and non-cardiogenic shock patients is self-evident.
- The average performance on the measure is 98.2% with a narrow performance gap of 1 to 4.2 percent. Some Committee members interpret the results as a moderate performance gap, while others did not see an opportunity for improvement.
- A Committee member was concerned that there was an overlap with the measure's post discharge

mortality rate which is similar to the current in-hospital mortality rate. The Committee member questioned if the measure's mortality rates excluded inpatient to which the developer confirmed it did not.

- Another Committee member questioned why the developer did not combine measure 0535 with measure 0536 with stratification for low-risk versus high-risk patients. The developer responded that the best approach based on their analysis is to have the two measures reported as a pair.
- Some Committee members raised concerns about the very small distribution of top versus low performers which may indicate that there is not enough distribution or variation in performance across hospitals.
- Developers noted the high prevalence and costs of PCIs. From 1987 to 2003, the number of PCI increased by 326% with more than 1 million PCI performed annually in the United States. The Committee agreed the measure addresses a significant health problem that is associated with high severity and high cost in care.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>
(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)
2a. Reliability: **H-4**; **M-11**; **L-6**; **I-0** 2b. Validity: **H-10**; **M-9**; **L-2**; **I-0**
<u>Rationale</u>:

- The Committee determined that the measure specifications were precisely specified and appropriate to capture mortality rates following PCI for non-STEMI and non-cardiogenic shock patients. The data elements were complete for implementation.
- There were some concerns raised from the Committee about the risk model used. The Committee cautioned the data extracted from the Cath PCI registry linked to the CMS mortality data might not be generalizable for patients <65 y/o.
- Reliability testing was conducted at both the performance measure score level and data element level. A test-retest approach was performed with the correlation coefficient being 0.256 which the Committee stated was sufficient for reliability.
- Some Committee members were concerned with the reliability of the data, which excluded hospitals with less than 25 PCIs, as low volume providers may have quality issues that will not be uncovered by this measure. The developer stated that excluding hospitals with less than 25 PCIs would provide more robust estimates around mortality at the individual site level.
- Validity testing was conducted at the data element level, with median agreement reported for 18 variables at 92 percent. Some members of the Committee acknowledge a threat to validity since not all data elements were used in the validity testing.

3. Feasibility: H-12; M-8; L-1; I-0
(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)
<u>Rationale</u>:

- The Committee agreed the measure is feasible for implementation. As mentioned with other measures using data elements from the CathPCI registry, there is a cost factor. However, for PCI, over 90 percent of

0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
hospitals that perform PCI participate in the registry which is feasible. • The developer noted that there is lag time from the time of data element abstraction from the registry to matching it to the CMS data; however, it is the only method available currently.
4. Use and Usability: H-9; M-10; L-1; I-1 *(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)* Rationale: • The measure currently is not being publicly reported. The Committee agreed that 30-day mortality rates have increased within the past few years and encouraged the use of this measure to better understand the mortality trends for quality improvement initiatives.
5. Related and Competing Measures • This measure directly competes with: • 0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock • 0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
Standing Committee Recommendation for Endorsement: **Y-17**; **N-4**
6. Public and Member Comment: May 27, 2014- June 25, 2014 • There were no public or member comments received for this measure.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Submission | Specifications
Description: This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older with STEMI or cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development, the measure cohort was derived in a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients. **Numerator Statement**: The outcome for this measure is all-cause death within 30 days following a PCI procedure in patients with STEMI or cardiogenic shock at the time of the procedure. **Denominator Statement**: The target population for this measure includes inpatient and outpatient hospital stays with a PCI procedure for patients at least 18 years of age, with STEMI or cardiogenic shock at the time of procedure, including outpatient and observation stay patients who have undergone PCI but have not been admitted. It is unlikely that patients in this cohort would not be admitted to the hospital, but we keep this criterion to be consistent with the complementary non-STEMI, non-cardiogenic shock PCI cohort. **Exclusions**: Hospital stays are excluded from the cohort if they meet any of the following criteria:

0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock

(1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer).

This exclusion is applied in order to avoid assigning the death to two separate admissions.

(2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI);

(3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures.

(4) PCIs for patients with more than 10 days between date of admission and date of PCI. Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.

Adjustment/Stratification: Risk Adjusted

Level of Analysis: Facility, Population : National

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Outcome

Data Source: Administrative claims, Other, Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-19**; **M-1**; 1b. Performance Gap: **H-16**; **M-4**; **L-1**; **I-0;** 1c. Impact: **H-17**; **M-4**; **L-0**; **I-0**

<u>Rationale</u>:

- Similar to 0535, the Committee agreed that the importance of the outcome is self-evident. The only difference between the two measures is that 0536 contains a sicker population with STEMI and cardiogenic shock.
- The Committee agreed that there is a significant performance gap and opportunity for improvement. The mean mortality is 12.6 percent with a range of 10.8 to 14.4 percent.
- The measure addresses a significant health problem with a very high severity, high cost patient population.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-3**; **M-17**; **L-1**; **I-0** 2b. Validity: **H-7**; **M-13**; **L-1**; **I-0**

<u>Rationale</u>:

- The Committee found the measure's specifications and exclusions to be reasonable. Similar to measure 0536, the data source is from the CathPCI registry and linked to the CMS mortality data with the same challenges discussed in the previous measure.
- The developer conducted reliability testing at the data element and performance measure score level. A test-retest approach was performed with an Intraclass Correlation Coefficient (ICC) of 0.122 which lead the Committee to conclude a moderate reliability score.
- Validity testing was conducted at the data element level with an overall agreement statistic reported, the median being 92 percent. The validation sample scored a 0.83 for the c-statistic which the Committee

0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
found to be sufficient for validity.
3. Feasibility: H-10; M-11; L-0; I-0 *(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)* Rationale: • Similar to 0535 and measures using data elements from the CathPCI registry, the Committee agreed that the measure is sufficient for feasibility. The same challenges were discussed as in the previous measures with the administrative burden and costs to implementation.
4. Use and Usability: H-10; M-11; L-0; I-0 *(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)* Rationale: • The Committee noted that the measure was originally NQF endorsed in 2009 and is currently up for re-endorsement. The measure is currently not publicly reported however the intention is for it to become publicly reported in the future. • Some members of the Committee cautioned that public reporting may lead to unintended consequences with high-risk patients.
5. Related and Competing Measures • This measure directly competes with: • 0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock) • 0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
Standing Committee Recommendation for Endorsement: **Y-19**; **N-2**
6. Public and Member Comment: May 27, 2014- June 25, 2014 • There were no public or member comments received for this measure.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
Submission | Specifications
Description: Percentage of patients admitted to a hospital with a primary diagnosis of an acute myocardial infarction or chronic stable angina or who during hospitalization have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation who are referred to an early outpatient cardiac rehabilitation/secondary prevention program. **Numerator Statement**: Number of eligible patients with a qualifying event/diagnosis who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention (CR/SP) program prior to hospital discharge or have a documented medical or patient-centered reason why such a referral was not made.

0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting

(Note: The program may include a traditional CR/SP program based on face-to-face interactions and training sessions or may include other options such as home-based approaches. If alternative CR/SP approaches are used, they should be designed to meet appropriate safety standards and deliver effective, evidence-based services.)

Denominator Statement: Number of hospitalized patients in the reporting period hospitalized with a qualifying cardiovascular disease event/diagnosis who do not meet any of the criteria listed in the denominator exclusion section below.

Exclusions: Exceptions criteria require documentation of one or more of the following factors that may prohibit cardiac rehabilitation participation:

Patient factors (e.g., patient resides in a long-term nursing care facility).

Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition).

Health care system factors (e.g., no cardiac rehabilitation/secondary prevention (CR/SP) program available within 60 min of travel time from the patient's home).

The only exclusion criterion for this measure is noted below:

Patients who expired before discharge.

Adjustment/Stratification: None

Level of Analysis: Facility, Clinician : Individual, Integrated Delivery System

Setting of Care: Hospital/Acute Care Facility, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility

Type of Measure: Process

Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-0**; **M-19**; **L-3**; **I-0; IE-0**; 1b. Performance Gap: **H-17**; **M-5**; **L-0**; **I-0;** 1c. Impact: **H-20**; **M-2**; **L-0**; **I-0**

<u>Rationale</u>:

- Evidence provided by the developer for the referral measure included six ACC/AHA guidelines for heart attacks with grading of the evidence for referral to cardiac rehab programs and a diagram of the relationship between cardiac rehab programs to health outcomes: Lower Mortality/Morbidity, Higher Quality of Life, Risk Factor Modification, Improved Function & Exercise Capacity, Improved Medication Adherence, Reduction in Re-Hospitalization Rates, and Cost Effective Care. The developer also provided the results of the 2009 Cochrane Systematic Review which supported cardiac rehabilitation.
- The Committee agreed the evidence provided is sufficient. Some members of the Committee were concerned that there was not a direct applicability of the evidence to the process of care being measured; rather, it was inferred that patients with referrals will go to cardiac rehab and have improved outcomes, not that the referral itself results in improved outcomes. There was no direct evidence provided linking inpatient referral to enrollment in cardiac rehab and improved health outcomes. The developer stated the measure focus is on referral because the provider has control over referral to drive health outcome.
- The Committee acknowledged the high performance gap in referral and enrollment across all population groups that the measure can address. The developer presented data from two registries that showed the low participation of cardiac rehab. In 2012, 703 hospitals participated in ACTION- Registry GWTG; the mean result of cardiac rehab was 67%. For the CathPCI registry in 2012, of 1360 reporting entities, the mean result was 59%. The Committee noted the disparity among minorities and women. A Committee

member asked about insurance status as a barrier to cardiac rehab, to which the developer replied it is not a major barrier since cardiac rehab is covered by most private insurance and Medicare. The developer acknowledged that it could be a barrier for those without coverage.

- The Committee agreed that the measure is a high priority measure. Committee members stated that cardiac rehab is a high impact, underutilized tool that can help improve quality of life and mortality. The developer noted only 14 percent of AMI patients and 30 percent of CABG patients currently utilize cardiac rehab post procedure.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>
(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)
2a. Reliability: **H-0**; **M-16**; **L-4**; **I-2** 2b. Validity: **H-0**; **M-16**; **L-6**; **I-0**
<u>Rationale</u>:

- For reliability testing, empirical testing was conducted with three samples: 7 hospitals using either paper or EHR records, the ACC/AHA ACTION-GWTG Registry, and the ACC CathPCI Registry. At the data element level, the 7 hospitals demonstrated reliability using intra-rater and inter-rater agreement between patient record reviews for two abstractors – inter-rater reliability for eligibility for CR – 95% (Kappa 0.77); referral to CR – 84% (Kappa 0.70); exceptions – 97% (Kappa 0.79). At the measure score level, a signal-to-noise analysis for both registries scored 0.99, above the accepted threshold of 0.7 for reliability.
- To demonstrate validity of the measure, the developer provided face validity. The measure score was assessed by 27 expert panel members of three ACC or AHA committees. 93% of the expert panel strongly supported the measure to accurately distinguish good and poor quality.
- Some members of the Committee raised concerns about missing patient population information with the sample size. The two registries do not fully represent all patients the measure addresses. The developer responded that the sample size is a good representation of the national trends overall with the exception of stable angina patients and valve surgery patients. The Committee recommended that the developer should follow up with STS for valve surgery data and the developer agreed.

3. Feasibility: H-7; M-14; L-1; I-0
(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)
<u>Rationale</u>:

- The Committee did not have any concerns with the feasibility of the measure. The data elements are included in the both ACC/AHA ACTION-GWTG Registry and the ACC CathPCI Registry and are thus routinely collected electronically.

4. Use and Usability: H-3; M-15; L-3; I-0
(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)
<u>Rationale</u>:

- The Committee noted that the measure is not used in public reporting; however, it is currently being used for Professional Certification or Recognition Program ACTION Registry-GWTG Achievement Award and for quality improvement and benchmarking.

0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
• The developer intends to use the measure for public reporting in the future.
5. Related and Competing Measures • This measure directly competes with: o 0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting
Standing Committee Recommendation for Endorsement: **Y-20**; **N-2**
6. Public and Member Comment: May 27, 2014- June 25, 2014 Comments received: • Commenters generally expressed support for the measure and the Committee's recommendation for endorsement. One commenter recommended a revision of the measure to capture more meaningful information such assessing whether patient received cardiac rehabilitation services rather than just assess whether a referral was made. Committee response: • Committee members generally agreed that participation is what is important and involves shared accountability with the patient. The Committee supports moving to outcome measures (participation) and would welcome submission of a participation measure for potential endorsement.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
Submission | Specifications
Description: Patients undergoing PCI who receive prescriptions for all medications (aspirin, P2Y12 and statins) for which they are eligible for at discharge **Numerator Statement**: Patients who receive all medications for which they are eligible. 1. Aspirin prescribed at discharge (if eligible for aspirin as described in denominator) AND 2. P2Y12 agent (clopidogrel, prasurgel, or ticlopidine) prescribed at discharge (if eligible for P2Y12 as described in denominator) AND 3. Statin prescribed at discharge (if eligible for statin as described in denominator) **Denominator Statement**: Patients surviving hospitalization who are eligible to receive any of the three medication classes: 1) Eligibile for aspirin (ASA): Patients undergoing PCI who do not have a contraindication to aspirin documented AND 2) Eligible for P2Y12 agent (clopidogrel, prasugrel, or ticlopidine): Patients undergoing PCI with stenting who do not have a contraindication to P2Y12 agent documented AND 3) Eligible for statin therapy: Patients undergoing PCI who do not have a contraindication to statin therapy. **Exclusions**: Discharge status of expired; patients who left against medical advice, patients discharged to hospice or for whom comfort care measures only is documented; patients discharged to other acute hospital **Adjustment/Stratification**:

0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients

Level of Analysis: Facility
Setting of Care: Hospital/Acute Care Facility
Type of Measure: Composite
Data Source: Electronic Clinical Data : Registry
Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-13**; **M-7**; **L-1**; **I-0; IE-0**; 1b. Performance Gap: **H-8**; **M-13**; **L-1**; **I-0;** 1c. Impact: **H-18**; **M-4**; **L-0**; **I-0**

Rationale:

- Based on the guideline recommendations presented as well as a 2013 JAMA systematic review that included 91 publications with priority given to data from large randomized controlled trials, systematic reviews and meta-analyses, the Committee agreed that the evidence supports the use of aspirin and anti-platelet therapy.
- Data extracted from the CathPCI registry (which encompasses over 1,600 hospitals) identifies a performance gap of 83% (at the 25th percentile) and 76%, (at the 10th percentile) thus showing an opportunity for improvement.
- A commonly performed procedure for patients with CAD, PCI procedures are associated with high costs. Ensuring the use of evidence-based therapies that have been shown to improve survival, reduce risk of infarction is considered a high priority.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-16**; **M-6**; **L-0**; **I-0** 2b. Validity: **H-2**; **M-17**; **L-0**; **I-0**

Rationale:

- The Committee determined that the measure specifications were precise, noting that all codes necessary to calculate the measure were present and the specifications were consistent with the evidence presented.
- The measure was tested for reliability at the measure score level using correlation of random split halves of the participating hospitals. The correlation coefficient was determined to be high (0.92).
- The Committee acknowledged that, although not a significant threat to validity, there was no empirical validation demonstrating that improvement in performance of this measure resulted in improved outcomes. Validity testing provided demonstrated face validity only.

3. Feasibility: H-18; M-4; L-0; I-0

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

- Rationale: Overall the Committee agreed the measure was feasible to implement specifically for facilities that are using the CathPCI registry. Concerns were raised about the implications of hospitals not utilizing the registry.

4. Use and Usability: H-19; M-3; L-0; I-0

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

Rationale:

- Although not currently being publicly reported, this measure is in use in a quality improvement program (Blue Distinction Centers for Cardiac Care).
- The Committee acknowledged that the measure displayed trends in improvement of performance over

time; however, this was significantly lower in the top performing sites.

- There is little burden of measurement or unintended consequences but substantial benefits to continuing the measure.

5. Related and Competing Measures

- This measure directly competes with:
  - 2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy Percentage of patients aged 18 years and older for whom PCI is performed who are prescribed optimal medical therapy at discharge

    It was determined by the Committee that the only difference in specifications is that this clinician-level measure has additional exceptions for medical reasons, patient reasons and system reasons. The need for complete harmonization was emphasized.

Standing Committee Recommendation for Endorsement: Y-22; N-0

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- Comments for this measure raised three issues:
  - Harmonization of medication in related measures (measures 2452 and 2379), specifically drugs for oral anti-platelet medications.
  - Data collection for adherence to medication. The commenter suggested revising the measure to capture adherence rather than assessing if the medication was prescribed. They noted it would help to enhance feasibility of pharmacy claims to be used in assessing P2Y12 agent and statin adherence.
  - Age specific clarification, the commenter requested a clarification of the appropriate age group for this measure. They noted the measure's description, denominator, numerator and/or exclusions did not specify age group.

Developer's Response:

- This measure has been tested and validated in the adult PCI population in patients 18 years of age and older. We agree that standardization of the measures presentation is an important objective. We defer to the NQF regarding the policies and procedures to achieve this objective for all measures submissions, including the presentation of age categories for the denominator population.

Committee Response:

- The Committee indicated that the evidence and guidelines for dual antiplatelet agents in patients with coronary artery disease and AMI are the same as for post-PCI. The evidence for post-CABG patients is less clear. As the Committee reviews other measures of antiplatelet agents in the cardiovascular portfolio, harmonization of the specified agents will be addressed.
- The Committee agreed that adherence measures are important. New measure #2379 Adherence to Anti-platelet Therapy after Stent Implementation measures adherence for P2Y12 agents. NQF endorsed measure # 0543 Adherence to Statin Therapy for Individuals with Coronary Artery Disease addresses adherence to statins in this population. The biggest difficulty is with aspirin which would not be captured.
- The Committee recommended to the measure developers that age inclusions should be explicit in the description for every measure.

7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X

8. Board of Directors Vote: Y-X; N-X

9. Appeals

2377 Defect Free Care for AMI

Submission | Specifications

Description: The proportion of acute MI patients >= 18 years of age that receive "perfect care" based upon their eligibility for each performance measures

Numerator Statement: The number of perfect care opportunities met from all eligible acute MI patients

Denominator Statement: All acute MI patients further broken down into STEMI and NSTEMI

Exclusions: The population is all patients equal to or over the age of 18 that have an acute MI. The population is further divided into two populations,those that have a STEMI and those that have an NSTEMI.

STEMI 41 StemiNoted = 1 AND AGE >= 18

NSTEMI 42 StemiNoted = 0 AND PosMarkers = 1 AND AGE >= 18

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Composite

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-11**; **M-11**; **L-0**; **I-0; IE-0**; 1b. Performance Gap: **H-12**; **M-7**; **L-2**; **I-0;** 1c. Impact: **H-15**; **M-7**; **L-0**; **I-0**

Rationale:

- The all-or-none composite measure encompasses eleven components of which the developer provided a systemic review and grading of empirical evidence. Based on ACC/AHA guidelines, evidence was presented to support the link to defect care for AMI and reduced mortality, which the Committee found sufficient.
- The Committee concluded that the data presented by the developer of a distribution of results with a mean of 59% and a median of 66% demonstrates an opportunity for improvement.
- Considered a leading cause of morbidity and mortality affecting large numbers, AMI is a significant health problem in terms of both severity and cost, making this a high priority.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-16**; **M-6**; **L-0**; **I-0** 2b. Validity: **H-6**; **M-15**; **L-1**; **I-0**

Rationale:

- Reliability testing was done at the level of the performance measure score and at the level of the data element.
- Testing at the performance score level was conducted for the level of analysis and data source as specified. The data used in testing was obtained from the ACTION Registry-GWTG for CY2011-2012. These data initially included 558 hospitals and 207,526 patients, although not all of these hospitals/patients were included in the testing.
- Developers also assessed the inter-rater reliability of the data elements by comparing abstracted data for 330 patients from the ACTION Registry-GWTG who were discharged in CY2010.
- No empiric validity testing was conducted for the composite measure; however the developers stated that the content validity of this measure was achieved by noted experts. Additionally, there was no description of the systematic nature of this assessment or any numeric results of that assessment provided.

3. Feasibility: H-7; M-12; L-2; I-0

2377 Defect Free Care for AMI

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

Rationale:

- The Committee agreed that the data currently being collected through voluntary reporting via the Get With the Guidelines (GWTG) registry is feasible.

4. Use and Usability: H-6; M-14; L-0; I-1

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

Rationale:

- The measure is presently being used for Professional Certification or Recognition with AR-GWTG program used for I with Benchmarking. There are plans for use in public reporting.
- The Committee stated concern that if the measure is used for accountability purposes, it may be difficult to distinguish between high and low performers given that only a small number of hospitals are reporting this measure.
- There were concerns of potential unintended consequences in that hospitals may not report every MI patient because pay-for-performance initiatives.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: Y-19; N-3

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- There was one comment received for this measure. The commenter raised concerns of the potential financial burden for hospitals to participate in the Action Registry, as there will be costs required for implementation, maintenance, and chart abstractions of the data registry.

Developer's Response:

- The ACTION Registry-GWTG is designed to capture all patients that present with an MI. The CathPCI Registry does not capture MI patients that may not undergo a diagnostic catheterization or PCI. If the Defect Free Care Composite Measure was applied to the CathPCI Registry, those MI patients that did not undergo at minimum a diagnostic catheterizations or PCI would not be captured. The other issue is that diagnostic catheterizations are optional in the CathPCI Registry. If the site only submits their PCI cases, many MIs will be lost in the measure.

Committee response:

- The Committee agreed that the burden of participating in multiple registries is a significant concern and encouraged developers (particularly ACC that has several registries) to consider the burden since there is a great deal of overlap among registries. Some Committee members noted the evolution in data capture and measurement and a need to develop eMeasures and leverage the use of EHRs.

7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X

8. Board of Directors Vote: Y-X; N-X

9. Appeals

2379 Adherence to Antiplatelet Therapy after Stent Implantation

Submission | Specifications

Description: Average proportion of days covered (PDC) for individuals with antiplatelet therapy during the 12 months following implantation of a coronary artery drug-eluting stent (DES) regardless of indication or a bare-metal stent (BMS) for acute coronary syndrome (ACS).

Numerator Statement: The sum of the days covered by the days' supply of all antiplatelet prescriptions during the days measured in the denominator

Denominator Statement: The sum of the days measured for all individuals who undergo a coronary artery DES regardless of indication or BMS for ACS at any time during the first 12 months of the 24-month measurement period and have at least two prescriptions for antiplatelet therapy during the 12 months following stent placement

Exclusions:

•Placements of a coronary artery BMS for a non-ACS indication are excluded.

•Individuals with contraindications to receiving the antiplatelet therapy are excluded.

Adjustment/Stratification:

Level of Analysis: Clinician : Group/Practice, Health Plan, Integrated Delivery System, Population : State

Setting of Care: Ambulatory Care : Clinician Office/Clinic

Type of Measure: Process

Data Source: Administrative claims

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-2**; **M-11**; **L-5**; **I-X; IE-4**; 1b. Performance Gap: **H-8**; **M-12**; **L-1**; **I-1;** 1c. Impact: **H-11**; **M-10**; **L-1**; **I-0**

Rationale:

- The Committee agreed that there is evidence to support this measure as the developer presented three guidelines that recommend use of anti-platelet agents for 12 months – Class I Recommendation.
- The developers also presented two studies that summarize the findings of two recent studies on the relationship between adherence to P2Y12 inhibitor therapy following the implantation of a coronary artery DES or BMS and patient outcomes. Both studies found that patients with PDC < 80% had higher mortality.
- Data presented on current performance for states, prescription drug plans, ACOs and physician groups with the mean values for all groups between 0.75-0.78, demonstrating a significant opportunity for improvement.
- Stent placement procedures are frequently performed and account for high resource use and lack of antiplatelet adherence is associated with severe patient and societal consequence, making this a high priority**.**

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-2**; **M-15**; **L-0**; **I-1** 2b. Validity: **H-1**; **M-15**; **L-1**; **I-1**

Rationale:

- According to the Committee, the specifications were detailed and consistent with evidence. This measure used pharmacy data to calculate the amount of medication dispensed for three medications: clopidogrel, prasugrel, and ticagrelor.
- ICD-9 and ICD-10 codes to identify patients with coronary artery stent placement in the inpatient and

outpatient setting were included as well as contraindications.

- The Committee had concerns with the inclusion of patients receiving bare metal stents without an acute coronary syndrome indication. It was recommended that the developer revise to exclude patients who received bare metal stents. During the Committee post-call, the developer presented the revised specifications for consideration, including any claim with a code listed in the specifications without a corresponding ACS claim (i.e., ICD-9 code of 410.xx and 411.xx). The Committee was satisfied with the newly revised information.
- Empiric reliability testing was conducted using a signal-to-noise analysis which was performed at the level of the measure score using Medicare claims data for states, drug plans, ACOs and physician groups. Based on the data presented, reliability was proven to be adequate across all measurement units: state level (.99), drug plan (.98), ACOs (.99) and physician groups (.99).
- The developer reports that due to sample size issues only a small percentage of physician groups (13.3%) have an adequate number of patients for reliable measurement. The reliability results for states, drug plans and ACOs were high (0.98=0.99).
- Face validity was assessed by the developer's Technical Expert Panel (TEP). TEP members who evaluated the measure for face validity 80% (12/15) agreed that the measure was valid as specified.

3. Feasibility: H-5; M-13; L-0; I-0

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

Rationale:

- The Committee agreed that the measure was feasible to implement as it uses administrative claims and pharmacy claims.

4. Use and Usability: H-0; M-17; L-1; I-0

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

Rationale:

- Although not currently in use, this measure has been submitted through the Measures under Consideration process for the CMS ACO Shared Savings program.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-16**; **N-1**

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- There were a few concerns raised from the comments received, which include:
  - Harmonization of medication in related measures (measures 0964 and 2379), specifically drugs for oral anti-platelet medications.
  - Potential inaccuracy of claims data used for the measure. The commenter highlighted that the use of administrative prescription data for compliance could be troublesome as it does not capture all data.
  - One commenter emphasized the importance of revising the measure to ensure that the proportion of days covered meets a minimum threshold so that the patient receives the appropriate clinical benefit. The commenter requested for clarification of the denominator statement.

Developer's Response:

- NQF 2379 has been harmonized to the extent feasible with related measures. Regarding medications, the

2379 Adherence to Antiplatelet Therapy after Stent Implantation
measure is specified with the drug class, specific medications by active ingredient name, and all clinically appropriate NDCs containing the active ingredient. Regarding the three year look-back period for inactive NDCs, it is a convention originally initiated by NCQA to ensure that medications which may still be dispensed are captured. This is applicable to drug products that have been discontinued by the drug manufacturer but are still approved by the FDA. If a medication becomes inactive because it is no longer approved by the FDA, that medication would be removed from the NDC list for the measure during a scheduled maintenance update. • Currently we are not aware of any P2Y12 inhibitors offered as $4 prescriptions. Therefore missing claims from these programs will not affect measure rates. We acknowledge that there may be other sources of missing data (e.g., drug samples) that cannot be accounted for with administrative data; however, at this time, we do not believe that the impact will be significant in overall measure rates, and attempting to capture these data by revising the measure would put an undue burden on providers • Due to relatively limited sample sizes for patients receiving stents, the dichotomous version of the measure did not produce reliable scores at the included levels of analysis. Therefore, the continuous variable measure was recommended since the scores were reliable at all levels of analysis. Regarding the denominator, only patients with at least 2 prescription drug claims are included in the measure. We have slightly modified the language in the specification to clarify that at least two "prescription drug claims" for P2Y12 inhibitors are required. Committee's Response: • The Committee indicated that the evidence and guidelines for dual antiplatelet agents in patients with coronary artery disease and AMI are the same as for post-PCI. The evidence for post-CABG patients is less clear. As the Committee reviews other measures of antiplatelet agents in the cardiovascular portfolio, harmonization of the specified agents will be addressed. • The Committee reviewed the developer response and noted that the measure only applies to patients with drug benefit. During the initial measure evaluation the Committee raised similar concerns and the developer agreed to limit the measure to health plans and ACOs and not at the practice level of analysis. Clinicians noted that samples are much less available now.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI
Submission | Specifications
Description: Percentage of patients, aged 18 years and older, for whom percutaneous coronary intervention (PCI) is performed with comprehensive documentation for the procedure that includes, at a minimum, the following elements: priority (acute coronary syndrome, urgent, elective, emergency/salvage); presence and severity of angina symptoms; use of antianginal medical therapies within two weeks prior to the procedure, if any; presence, results, and timing of non-invasive stress test, fractional flow reserve (FFR), or intravascular ultrasound (IVUS), if performed; and significance of angiographic stenosis (may be quantitative or qualitative) on coronary angiography for treated lesion. **Numerator Statement**: Patients with comprehensive documentation for the procedure that includes, at a minimum, the following elements: - Priority: acute coronary syndrome, urgent, elective, emergency/salvage - Presence and severity of angina symptoms [eg, Canadian Cardiovascular Society Classification (CCS) system] - Use of antianginal medical therapies within two weeks prior to the procedure, if any - Presence, results, and timing of non-invasive stress test FFR or IVUS, if performed - Significance of angiographic stenosis (may be quantitative or qualitative) on coronary angiography for treated

lesion

Denominator Statement: All patients aged 18 years and older for whom PCI is performed

Exclusions: None

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Process

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-4**; **M-17**; **L-1**; **I-0; IE-0**; 1b. Performance Gap: **H-18**; **M-2**; **L-4**; **I-0;** 1c. Impact: **H-19**; **M-3**; **L-0**; **I-0**

Rationale:

- The Committee agreed that the evidence presented from the summary of two clinical practice guidelines, 1) 2012 Focused Update for Appropriateness of Use Criteria (AUC) and 2) 2011 ACCF/AHA/SCAI Guideline for PCI clearly outlined nine indications for PCI however, no evidence is presented on how documentation is related to patient outcomes.
- The developer presents data from the registry that displays an opportunity for improvement with a mean performance rate of 43.3% in 2011 and 34.3% in 2012.
- CAD is among the number one leading cause of death in the United States. There are approximately 600,000 PCIs performed annually at a cost of about $12 billion. Of these procedures, 12% were inappropriate (patients with little or no angina and low risk ischemia on stress test). This represents a risk to patients of unnecessary complications and healthcare dollars with little or no benefit.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-7**; **M-15**; **L-0**; **I-0** 2b. Validity: **H-6**; **M-14**; **L-1**; **I-1**

Rationale:

- The measure specifications were detailed and consistent and tested for use with the CathPCI registry which is owned by the developer, ACC. The specifications indicate patients for whom more than one PCI procedure is performed, with the most recent PCI procedure counted.
- Empiric testing was performed on all elective PCIs entered into the CathPCI registry in 2012 using signal-to-noise analysis. Reliability results improved with number of procedures; for the minimal number of procedures (>10) the reliability is 0.76.
- Face validity was the only method of testing for validity and determined to be high. The testing was performed only on elective PCIs however, the developer report that results for acute/urgent PCIs was low (<0.3%).
- The Committee addressed a potential threat to validity in that the missing data element for stress testing may have implications: lack of documentation or unmappable patients because they did not meet the appropriate use criteria. Based on the data presented, 40% of patients were not included. The developer identified the missing data as those who did not receive a prior stress test.

3. Feasibility: H-13; M-9; L-0; I-0

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/

2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI
unintended consequences identified 4d. Data collection strategy can be implemented) Rationale: • The Committee agreed that the data elements are routinely acquired during care delivery for patients being considered for PCI. • The Committee agrreed that the benefits of the measure appear to outweigh any potential unintended consequences.
4. Use and Usability: H-13; M-8; L-0; I-1 *(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)* Rationale: • Although this measure is presently not being publicly reported, a voluntary program is now being piloted using NCDR with another measure (30 day risk standardized readmission following PCI).
5. Related and Competing Measures • No related or competing measures noted.
Standing Committee Recommendation for Endorsement: **Y-21**; **N-2**
6. Public and Member Comment: May 27, 2014- June 25, 2014 Comments Received: • There was one comment received for this measure. The commenter did not support the measure, noting that assessment of comprehensive documents should not be used to assess quality performance but rather should be done as a practice of medicine. The measure should assess the appropriateness of PCI, and not just documentation. Committee's Response: • The Committee supports moving toward more outcome measures and that developers should incorporate these suggestions in the future.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

2450 Heart Failure: Symptom and Activity Assessment
Submission | Specifications
Description: Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented **Numerator Statement**: Patient visits with quantitative results of an evaluation of both current level of activity and clinical symptoms documented **Denominator Statement**: All patient visits for those patients aged 18 years and older with a diagnosis of heart failure **Exclusions**: Not applicable. No exclusions for this measure. **Adjustment/Stratification**: **Level of Analysis:** Clinician : Individual **Setting of Care:** Ambulatory Care : Clinician Office/Clinic, Home Health, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility,

2450 Heart Failure: Symptom and Activity Assessment

Ambulatory Care : Outpatient Rehabilitation

Type of Measure: Process

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **H-1**; **M-13**; **L-3**; **I-1 IE-0**; 1b. Performance Gap: **H-16**; **M-3**; **L-0**; **I-0;** 1c. Impact: **H-16**; **M-2**; **L-2**; **I-0**

<u>Rationale</u>:

- The Committee noted that there was no information on the quantity, quality, or consistency of the evidence submitted for two of the three guideline recommendations. Additionally, the background evidence was driven from poor recommendations both in ACCF AHA (2013) guidelines and HFSA (2010).
- Based on the PINNACLE registry which includes over 1,200 providers, the mean performance rate was 36.8% in 2011 and 35.3% in 2012, illustrating a significant opportunity for improvement.
- Approximately 5.1 million Americans aged 20 years and older are currently suffering from HF. The impact of heart failure is especially apparent among elderly patients, with an incidence rate of nearly 10 per 1000 population among patients aged 65 years and older. Assessing better measures of accountability for documenting assessment of clinical activity and clinical system functions are important to quality of care, thus making this measure a high priority.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-11**; **M-9**; **L-0**; **I-0** 2b. Validity: **H-1**; **M-16**; **L-2**; **I-1**

<u>Rationale</u>:

- The Committee determined that the measure specifications were precise and consistent with the evidence presented.
- The Committee agreed that reliability of the measure was demonstrated, with the reliability results from a beta-binomial model measuring signal-to-noise ratio at .99.
- Validity testing was based on face validity of the data extracted from the PINNACLE registry. 63% of 16 respondents either agree or strongly agree that this measure can accurately distinguish good and poor quality of care.
- The Committee believed there to be subjectivity of how patients were assessed potentially from New York Heart Association Classification, but overall believed this measure to be scientifically acceptable.

3. Feasibility: H-1; M-2; L-3; I-4

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

<u>Rationale</u>:

- There were concerns regarding the consistency of extraction of the data components. Variable documentation across multiple health systems may lead to inconsistencies in implementation of the measure or extracting the data to calculate the measure.

4. Use and Usability: H-2; M-3; L-5; I-0

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

<u>Rationale</u>:

- The Committee noted that the measure is currently in use in accountability programs, including ACC Cardiology Practice Improvement Pathway (CPIP)/Bridges to Excellence Cardiovascular Practice

2450 Heart Failure: Symptom and Activity Assessment
Recognition Program and Quality Improvement with Benchmarking (external benchmarking to multiple organizations) - PINNACLE Registry. There are plans for use in public reporting.
5. Related and Competing Measures • No related or competing measures noted.
Standing Committee Recommendation for Endorsement: Y-16; N-3
6. Public and Member Comment: May 27, 2014- June 25, 2014 Comments received expressed concerns with endorsing this measure: • The evidence supporting symptom and activity assessment is based only on expert consensus, and there is therefore a lack of data suggesting that better performance would lead to improved patient outcomes. • This measure only assesses if an activity assessment occurred but it does not capture actions taken based on the survey results. Additionally, not every physician office visit by a patient with heart failure pertains to cardiovascular care, and evaluation of activity level and clinical symptoms may be unnecessary and duplicative. • One commenter agreed with the Committee's comments regarding the time to complete the survey as well as literacy levels may be a barrier to successful implementation. The survey may be appropriate for a cardiologist, but the commenter has concerns about adding another mandate to the already short face-to-face time with patients during a visit. Committee response: • The Committee reviewed their prior discussion that focused on the importance of getting physicians to document activity and function which is related to mortality. The Committee and developers acknowledge that the NYHA classification is subjective but clinical trials using it are informative. The developer clarified that the measure is "for patients either in their initial evaluation for heart failure and in every follow-up appointment for heart failure". Committee members suggested that a Patient-reported Outcome measures would be important for these patients
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

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2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
Submission | Specifications
Description: Percentage of patients, regardless of age, discharged from an inpatient facility to ambulatory care or home health care with a principal discharge diagnosis of heart failure for whom a follow up appointment was scheduled and documented prior to discharge (as specified) **Numerator Statement**: Patients for whom a follow up appointment was scheduled and documented prior to discharge including either: - an office visit for management for heart failure with a physician OR advanced practice nurse OR physician assistant OR - a home health visit for management of heart failure **Denominator Statement**: All patients, regardless of age, discharged from an inpatient facility (ie, hospital inpatient or observation) to ambulatory care (home/self care) of home health care with a principle discharge diagnosis of heart failure **Exclusions**: Denominator exclusions include: Patient was discharged to a health care facility for hospice care, to home for hospice care, or to a rehabilitation facility.

2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
Patient left against medical advice. Patient expired. Denominator exceptions include: Documentation of medical reason(s) for not documenting that a follow up appointment was scheduled Documentation of patient reason(s) for not documenting that a follow up appointment was scheduled (eg, international patients, patients from state and/or local corrections facilities for whom scheduling the appointment is prohibited) **Adjustment/Stratification**: **Level of Analysis:** Facility **Setting of Care:** Hospital/Acute Care Facility **Type of Measure**: Process **Data Source**: Electronic Clinical Data : Registry **Measure Steward**: American College of Cardiology
STANDING COMMITTEE MEETING [04/21/2014—4/22/2014] **1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>** (1a. Evidence, 1b. Performance Gap, 1c. High Impact) 1a. Evidence: **H-3**; **M-13**; **L-1**; **I-0; IE-1**; 1b. Performance Gap: **H-17**; **M-1**; **L-0**; **I-0;** 1c. Impact: **H-19**; **M-0**; **L-0**; **I-0** <u>Rationale</u>: • The Committee had varied perspectives on the evidence presented in support of this measure. Some believed that there was sufficient literature, including a meta-analysis and several studies that demonstrated that those who have greater contact with the healthcare system tend to do better and have a lower readmission rate. Others believed that although there was evidence that a combination of discharge planning, case management interventions and care transitions reduce readmissions for heart failure, there was no evidence indicating that the post-discharge appointment alone resulted in improved outcomes. • The developer presents data on results from 2012 (mean 44.6%) which is improved from 2011 (mean 16.8%). • The developers report that findings from Get With the Guidelines data, summarized in a 2011 article, demonstrate disparities in post-discharge follow-up: "After multivariable adjustment for baseline characteristics of the study population, the odds of early follow-up were 13% lower in women compared to men and 16% lower in black patients compared to patients of other races." • CHF is a leading cause of morbidity and mortality; reducing morbidity, mortality, and readmissions have been a national priority. The cost implications presented are substantial, noted as $30 billion annually.
2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u> (2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity) 2a. Reliability: **H-6**; **M-11**; **L-1**; **I-0** 2b. Validity: **H-0**; **M-15**; **L-4**; **I-0** <u>Rationale</u>: • The Committee determined that the measure specifications were precise, noting that all codes necessary to calculate the measure were present and the specifications were consistent with the evidence presented. • Empiric reliability testing was performed for the measure score using signal-to-noise analysis on in the derivation cohort based on the GWTG database records from 2011 and 2012. An overall Signal-to-Noise ratio (SNR) was estimated among sites with at least 200 patients, as well as hospital-specific SNR estimates. • Face validity of the measure score was assessed (no empiric testing) by 17 members from three ACC or

2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
AHA committees not involved with the measure development. 69% of respondents either agree or strongly agree that this measure can accurately distinguish good and poor quality.
3. Feasibility: H-9; M-10; L-0; I-0 *(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)* Rationale: • This measure is specified by use in a registry, which is the Get With The Guidelines®-Heart Failure Patient Management Tool.
4. Use and Usability: H-10; M-9; L-0; I-0 *(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)* Rationale: • The measure currently captures physician office visits and home health but should be enlarged to include telephone visit with biometric data. • The developer described the measure as currently in use in two programs, but not publicly reported. Plan for public reporting is incorporation in CMS PQRS program, but no timeframe given. Measure improvement seen in limited time of data collection for performance. Only concern is public report, but confident in its occurrence within 6 years.
5. Related and Competing Measures • No related or competing measures noted.
Standing Committee Recommendation for Endorsement: **Y-18**; **N-1**
6. Public and Member Comment: May 27, 2014- June 25, 2014 Comment Received: • One commenter suggested a revision of the measure to capture whether the patient had a follow-up visit, not just the appointment as it would have a highlight process to outcome. • Committee Response: • The Committee supports moving to outcome measures and would welcome submission of the suggested measures for potential endorsement.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
Submission | Specifications
Description: Risk adjusted rate of intra and post procedure bleeding for all patients age 18 and over undergoing PCI . **Numerator Statement**: Patients 18 years of age and older with a post-PCI bleeding event as defined below: Post-PCI bleeding defined as any ONE of the following: 1. Bleeding event w/in 72 hours ; OR 2. Hemorrhagic stroke; OR 3. Tamponade ; OR 4. Post-PCI transfusion for patients with a pre-procedure hgb >8 g/dL and pre-procedure hgb not missing; OR

2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI

5. Absolute hgb decrease from pre-PCI to post-PCI of >= 3 g/dl AND pre-procedure hgb =<16 g/dL AND pre-procedure hgb not missing.

Denominator Statement: Patients 18 years of age and older with a PCI procedure performed during admission

Exclusions: 1. NCDR Registry patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admis sion);

2. Patients who died on the same day of the procedure

3. Patients who had CABG during the admission

4. Patients with pre procedure hemoglobin <8 g/dL (severely anemic)

Adjustment/Stratification:

Level of Analysis: Facility

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Composite

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Impact)

1a. Evidence: **Y-21; N-0**; 1b. Performance Gap: **H-19**; **M-2**; **L-0**; **I-0;** 1c. Impact: **H-17**; **M-3**; **L-0**; **I-0**

Rationale:

- The Committee agreed that the evidence presented from several large studies, including a study from the Mayo Clinic, demonstrated "that sheath size, intensity and duration of anticoagulation with heparin, and procedure time were each independent predictors of [bleeding] complications."
- It was also noted that the distribution of hospitals' observed to expected ratios show that there are some sites with excellent performance and others with rates of bleeding that are 80% or greater than expected. Data for 2011 and 2012 on more than 600,000 PCIs each year showed a mean post-PCI bleeding rate of 5.7% in 2011 and 5.5% in 2012.
- The developer reports that from the registry they observed "some statistically significant differences by gender, race and insurance status, the absolute rates after patient-level adjustment were clinically marginal, except for gender which is a strong risk factor for bleeding."
- The developers note that " In this large registry of patients undergoing PCI, post procedural bleeding events were associated with increased risk of in-hospital mortality, with an estimated 12.1% of deaths related to bleeding complications, illustrating a high priority

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-15**; **M-7**; **L-0**; **I-0** 2b. Validity: **H-17**; **M-5**; **L-0**; **I-0**

Rationale:

- The Committee determined that the measure specifications were precise, noting that all codes necessary to calculate the measure were present and the specifications were consistent with the evidence presented.
- Empiric reliability testing was performed using data from a cohort of the NCDR CathPCI (2012). Signal-to-noise testing showed a hospital reliability ranging from 0.76 to 0.92. Data element reliability and validity were assessed by audit of the data against medical record abstraction. Percent agreement and Kappa values are presented. Three data elements had <70% agreement (CAD presentation, angina l classification, and PCI indication), indicating suboptimal reliability.
- The Committee accepted the systematic assessment of face validity conducted by the developers; in this

assessment, the group of experts ensured the data dictionaries and metrics were consistent across registries. They also reviewed and approved the methodology and results of the bleeding outcome and model.

- The test sample appears adequate to generalize for widespread implementation. The results demonstrate sufficient reliability for most, but not all data elements, for identifying differences in performance.

3. Feasibility: H-19; M-5; L-0; I-0

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

Rationale:

- No concerns with feasibility as the developer noted that the data is available via several methods: electronic transfer to the registry from the procedure/care setting; web-based tool for manual data entry or from an EHR.

4. Use and Usability: H-16; M-5; L-0; I-0

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

Rationale:

- This measure was noted as currently being used in quality improvement programs with benchmarking as well as the Blue Distinction Centers for Cardiac Care, a national designation program that recognizes hospitals that demonstrate expertise in delivering quality specialty care, safely and effectively (sponsored by Blue Cross Blue Shield).
- The Committee noted a potential unintended consequence is physician transparency and their willingness to report and record adverse events.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: Y-22; N-0

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- Two comments were received for this measure. One supported the measure while the other highlighted some concerns. The commenter expressed concern that patients may be misled by the measure results and perhaps be dissuaded from going to a high quality center. Additionally, the commenter noted flaws in the measure's specifications and routine surveillance.

Developer's Response:

- The risk adjustment model employed for this measure has undergone substantial validation to ensure that it accounts for numerous aspects of case mix.
- As is the case for all of its measures, the ACC will continue to perform surveillance to ensure that the measures characteristics remain valid and relevant. This will include an assessment of the extent to which the small minority of patients (<1.5%) who undergo major surgery during the episode of care during which their PCI occurred, influences the results of the measure.
- The NCDR applies an extensive data quality program that includes but is not limited to an audit. The audit program continues to expand in scope to include additional sites and includes outlier assessment to facilitate targeted audits.

Committee Response:

- The Committee acknowledged the excellent points raised by the comments and noted the good responses by the developer. The Committee supported the developer's plan to consider the concerns raised regarding exclusions within their surveillance of the measure.

7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X

8. Board of Directors Vote: Y-X; N-X

2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
9. Appeals

2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
Submission | Specifications
Description: This measure estimates hospital 30-day risk-standardized mortality rates following admission for AMI using clinical information collected at presentation in an electronic health record (EHR). Mortality is defined as death from any cause within 30 days of the index admission date. **Numerator Statement**: The outcome for this measure is 30-day all-cause mortality. We define all-cause mortality as death from any cause within the 30 days after the index admission date. **Denominator Statement**: The cohort includes inpatient admissions for patients aged 65 years and older who were discharged from short-term acute care hospitals with a principal discharge diagnosis of AMI. **Exclusions**: The measure excludes index admissions: 1) For patients who were discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge); 2) For patients who were transferred in from another short-term acute care institution (because the death is attributed to the hospital where the patient was initially admitted); 3) With unreliable data (age >115 years); 4) That were not randomly selected from a patient's multiple qualifying AMI admissions in a year (because AMI patients may have multiple admissions in a year and the measure includes one randomly selected AMI admission per patient per year); 5) With unknown death (missing vital status) after linking to the Medicare Enrollment Database or other source of death data. **Adjustment/Stratification**: **Level of Analysis:** Facility **Setting of Care:** Hospital/Acute Care Facility **Type of Measure**: Outcome **Data Source**: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Laboratory, Other **Measure Steward**: Centers for Medicare & Medicaid Services
STANDING COMMITTEE MEETING [04/21/2014—4/22/2014] **1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>** (1a. Evidence, 1b. Performance Gap, 1c. High Impact) 1a. Evidence: **Y-19**; **N-0**; 1b. Performance Gap: **H-16**; **M-3**; **L-1**; **I-1;** 1c. Impact: **H-19**; **M-2**; **L-0**; **I-0** <u>Rationale</u>: • Adequate evidence was provided to support the rationale of the relationship between AMI mortality and complex critical aspects of care such as communication between providers, patient safety and coordinated transitions to the outpatient environment. • Performance measure scores from the measure as specified were calculated using data from 280 hospitals who participated in the ACTION Registry-Get With The Guidelines (AR-G) that were merged with CY2009 Medicare Part A claims data. These data included information on 20,540 Medicare patients aged 65 and older with an AMI admission. • The risk-standardized mortality rates derived from these registry data ranged from of 9.6% to 13.1% (mean=10.8%). • AMI mortality is high priority; the ddevelopers noted the economic burden associated with AMI (i.e., In

2008, AMI was the 6th most expensive condition treated in U.S. hospitals and the 6th most expensive condition billed to Medicare, thus characterizing this as a high priority.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-2**; **M-13**; **L-4**; **I-2** 2b. Validity: **H-4**; **M-14**; **L-3**; **I-1**

Rationale:

- The eMeasure specification captures the data elements and measure logic needed for automated measure calculation. All necessary codes to identify MI patient discharges, DOB, death, discharge, and in-transfer status were captured. The data elements required for risk adjustment- age, heart rate, systolic blood pressure, troponin ratio, creatinine- were also presented.
- This outcome measure is risk-adjusted using a statistical risk model. The descriptions and values for the five variables used in the risk-adjustment model are included in the specifications (age, heart rate, systolic blood pressure, troponin ratio and initial creatinine value). Based on the stability of the odds ratio for these values, from data element reliability testing (performed with registry data) confirms its reliability.
- Validity testing was conducted at both the data element level and the measure score level. Performance measure score validity testing was conducted by correlating the risk-adjusted AMI mortality rates calculated from AR-G registry data for CY2009 using the risk-adjustment model developed for this measure to the risk-adjusted AMI mortality rates calculated from administrative claims data for CY2009 using a different risk-adjustment model. The Pearson correlation value was considered high (at 0.86), displaying a high degree of association between the two sets of scores.

3. Feasibility: H-10; M-12; L-0; I-0

(4a. Clinical data generated during care delivery; 4b. Electronic sources; 4c.Susceptibility to inaccuracies/ unintended consequences identified 4d. Data collection strategy can be implemented)

Rationale:

- The measure developer concluded that there were no concerns regarding measure logic feasibility based on the feasibility assessment that includes survey results from EHR vendors and hospital staff.

4. Use and Usability: H-8; M-11; L-2; I-0

(Meaningful, understandable, and useful to the intended audiences for 3a. Public Reporting/Accountability and 3b. Quality Improvement)

Rationale:

- This measure is not currently in use but has been proposed to be included in future CMS Hospital Inpatient Quality Reporting Program.

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: **Y-21**; **N-1**

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comment Received:

- There was one comment received for this measure that raised concerns on the testing and validity of the measure's data. The commenter recommended that the testing of data elements be validated with EHR vendors and healthcare facilities that will report on this measure as data abstraction may be burdensome.

Developer's Response:

- We have tested the feasibility and validity of the data elements across multiple EHR systems. The results of those analyses support the ability of providers to map and extract these data elements from current EHR software systems automatically, consistently, and accurately. CMS plans to test the electronic submission of the data prior to putting the measure into implementation.

Committee's Response:

- The Committee acknowledged the developer response and continued to recommend the measure

2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

~~Measures Where Consensus Is Not Yet Reached~~

0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting

Submission | Specifications

Description: Percentage of patients evaluated in an outpatient setting who in the previous 12 months have experienced an acute myocardial infarction or chronic stable angina or who have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation, who have not already participated in an early outpatient cardiac rehabilitation/secondary prevention program for the qualifying event, and who are referred to an outpatient cardiac rehabilitation/secondary prevention program.

Numerator Statement: Number of patients in an outpatient clinical practice who have had a qualifying event/diagnosis during the previous 12 months, who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention (CR/SP) program. (Note: The program may include a traditional CR/SP program based on face-to-face interactions and training sessions or may include other options such as home-based approaches. If alternative CR/SP approaches are used, they should be designed to meet appropriate safety standards and deliver effective, evidence-based services.)

Denominator Statement: Number of patients in an outpatient clinical practice who have had a qualifying cardiovascular event in the previous 12 months and who do not meet any of the criteria listed in the denominator exclusion section below, and who have not participated in an outpatient cardiac rehabilitation program since the qualifying event/diagnosis.

Exclusions: Exceptions criteria require documentation of one or more of the following factors that may prohibit cardiac rehabilitation participation: Patient factors (e.g., patient resides in a long-term nursing care facility). Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition). Health care system factors (e.g., no cardiac rehabilitation/secondary prevention (CR/SP) program available within 60 min of travel time from the patient's home). The only exclusion criterion for this measure is noted below: Patients already referred to CR from another provider/facility and/or was participating in CR prior to encounter with provider at the current office/facility.(1) 1- When the provider discusses CR/SP referral with the patient, if the patient indicates that he/she has already been referred to CR/SP, then that provider would not be expected to make another referral. However, the provider should document that information in the medical record.

Adjustment/Stratification:

Level of Analysis: Clinician : Group/Practice, Clinician : Individual, Integrated Delivery System, Clinician : Team

Setting of Care: Ambulatory Care : Clinician Office/Clinic

Type of Measure: Process

Data Source: Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap, 1c. High Priority)

1a. Evidence: **H-1**; **M-15**; **L-4; I-2**; 1b. Performance Gap: **H-19**; **M-1**; **L-1**; **I-1** 1c. High Priority: **H-16**; **M-4**; **L-1**; **I-1**

<u>Rationale</u>:

- Evidence provided by the developer for the referral measure included six ACC/AHA guidelines for heart attacks with grading of the evidence for referral to cardiac rehab programs and a diagram of the relationship between cardiac rehab programs to health outcomes: lower Mortality/Morbidity, Higher Quality of Life, Risk Factor Modification, Improved Function & Exercise Capacity, Improved Medication Adherence, Reduction in Re-Hospitalization Rates, and Cost Effective Care. The developer also provided the results of the 2009 Cochrane Systematic Review which supported cardiac rehabilitation.

0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting

- The developer presents data on current performance from 2011 and 2012 with a mean result of 9.18% (in 20120, demonstrating a significant opportunity for improvement.
- Despite the healthcare priority associated with cardiac rehabilitation programs and the documented benefits, it still remains a vastly underutilized resource, with referral rates in the United States ranging from 6.6 to 53.5% of eligible patients in a state by state analysis, with overall CR usage of 13.9% of patients hospitalized for acute myocardial infarction and 31.0% of patients who underwent coronary artery bypass graft surgery.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-1**; **M-10**; **L-5**; **I-2** 2b. Validity: **H-1**; **M-9**; **L-6**; **I-2**

<u>Rationale</u>:

- The Committee agreed that the measure was reliable with empiric reliability of the measure score at 0.99 for all quartiles, using data from the PINNACLE registry.
- Face validity of the measure score was assessed by 27 members of three ACC or AHA committees. It was determined that 93% of respondents either agree or strongly agree that the outpatient measure can accurately distinguish good and poor quality.
- While the Committee was very supportive of the importance of cardiac rehabilitation for this subset of patients, concern was raised that the specifications of the measure require patients with chronic stable angina to be referred to cardiac rehabilitation annually, which is not supported by the evidence.

3. Feasibility: H-1; M-5; L-11; I-2

(3a. Data generated during care; 3b. Electronic sources; and 3c. Data collection can be implemented (eMeasure feasibility assessment of data elements and logic)

<u>Rationale</u>:

- The Committee raised concerns regarding feasibility - the measure is not routinely generated and used in healthcare delivery. Additionally, being able to define and categorize the patient population, those that fall between stable and unstable angina was also of concern.

4. Use and Usability: H-2; M-5; L-9; I-2

*(*4a. Accountability/transparency; and 4b. Improvement – progress demonstrated; and 4c. Benefits outweigh evidence of unintended negative consequences)

<u>Rationale</u>:

- This measure is currently being used used by PQRS and Bridges to Excellence Cardiovascular Practice Recognition Program with plans for public reporting.
- The Committee did voice concerns of transparency as it may be difficult for the clinician to transmit information as a result of various electronic sources being utilized.

5. Related and Competing Measures

- This measure directly competes with:
    - 0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting

  The Committee voiced concern that providers could be penalized by both this measure and by the companion measure (0642), if a patient is referred to cardiac rehabilitation prior to discharge from an inpatient admission but has not enrolled prior to the outpatient visit with the same

provider.

Standing Committee Recommendation for Endorsement: Y-8; N-11

Rationale

- During the in-person meeting post call, the Committee did not reach consensus on this measure. It was determined that this measure will be posted for public commenting and at that time, these comments will be reviewed for consideration by the Committee.
- ~~During~~After the post-comment call, the Committee reviewed the comments received and narrowly voted to recommend the measure for continued endorsement. The voting results are below:
  - Yes- 11 ; No- 7

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- NQF received 13 comments for this measure. Several supportive comments were received for the measure, with commenters indicating that the measure is an important companion to measure 0642. Commenters also acknowledged the measure addresses an area of high morbidity, mortality, and healthcare costs. Several comments addressed the specific concerns raised by the Committee
- Additionally, commenters raised some concerns with the measure, they include:
  - Concerns that the denominator was incorrectly written.
  - Concerns with the "complications of the measure", the commenter noted the measure lacks strong evidence to outcome and may be too burdensome for discerning numerator and denominator.
  - One commenter suggested the revision of the measure to capture whether the patient actually received rehabilitation services rather than just the referral as it would emphasize outcome.

Developer's response:

- The denominator description statement is correct as it is currently written. Patients who have had a qualifying inpatient cardiovascular event and who have already been referred to an outpatient CR program, would not be included in the outpatient measure since they would have already been referred from an inpatient setting. The focus of the referral measure from an outpatient setting is to include those patients who have had a qualifying event, but who have not yet been referred to an outpatient CR program.

Committee's Response:

- The Committee reviewed the comments and reiterated concerns about outpatient providers being penalized if an inpatient is referred and attends a cardiac rehabilitation program but this is not documented in the outpatient record.
- Committee members generally agreed that participation is what is important and involves shared accountability with the patient. The Committee supports moving to outcome measures (participation) and would welcome submission of a participation measure for potential endorsement.
- After review of the comments the Committee narrowly voted to recommend the measure for continued endorsement. The voting results are below:
  - Yes- 11 ; No- 7
- The measure is recommended for endorsement and pursuant with NQF process will be posted for NQF member voting.

7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X

8. Board of Directors Vote: Y-X; N-X

9. Appeals

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2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy

Submission | Specifications

Description: Percentage of patients aged 18 years and older for whom PCI is performed who are prescribed optimal medical therapy at discharge

Numerator Statement: Patients who are prescribed* all of the medications, for which they are eligible, at discharge

*Prescribed may include prescription given to the patient for medications at discharge OR patient already taking medications as documented in current medication list

Denominator Statement: All patients aged 18 years and older for whom PCI is performed who are eligible for any of the following medications (ie, patient has no contraindication, allergy, intolerance):

- Aspirin
- P2Y12 inhibitor (only for PCIs with stenting)
- Statin

Exclusions: Patients who expired

Patients who left against medical advice

Patient discharged to hospice or for whom comfort care measures only is documented

Patient discharged to other acute care hospital

Adjustment/Stratification:

Level of Analysis: Clinician : Individual

Setting of Care: Hospital/Acute Care Facility

Type of Measure: Composite

Data Source: Electronic Clinical Data : Registry

Measure Steward: American College of Cardiology

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap, 1c. High Priority)

1a. Evidence: **H-13**; **M-7**; **L-1**; **I-0; IE-0**; 1b. Performance Gap: **H-8**; **M-13**; **L-1**; **I-0;** 1c. Impact: **H-18**; **M-4**; **L-0**; **I-0**

Rationale:

- The Committee agreed that there was strong evidence to support the use of aspirin and anti-platelet agents to reduce the risk of clot formation in the stent and statins as secondary prevention for CAD.
- Registry data for 2011-2012 found the median hospital performance (1.2 million patients in 1,386 hospitals) was 88.6%.
- In 2011, PCI resulted in 3.2 day length of stay (mean); more than $72,000 in hospital charges (mean); and 1.2% mortality rate, demonstrating a high priority.

2. Scientific Acceptability of Measure Properties: The measure meets the Scientific Acceptability criteria

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-3**; **M-13**; **L-3**; **I-2** 2b. Validity: **H-2**; **M-17**; **L-0**; **I-0**

Rationale:

- The Committee determined that the measure specifications were precise, noting that all codes necessary to calculate the measure were present and the specifications were consistent with the evidence presented.
- Reliability testing of the measure score was performed using correlation of random split halves of the participating operators. The correlation coefficient of 0.82.

- No empiric testing of validity was performed.
- Face validity was assessed by content experts of three ACC and/or AHA committees. Of 16 committee members, 87.5% of respondents either agree or strongly agree that this measure provides an accurate reflection of quality and can be used to distinguish good and poor quality.

3. Feasibility: H-18; M-4; L-0; I-0

(3a. Data generated during care; 3b. Electronic sources; and 3c. Data collection can be implemented (eMeasure feasibility assessment of data elements and logic)

Rationale:

- The Committee acknowledged that the measure is currently in use and the data is routinely generated through care delivery and captured in electronic sources.
- The Committee expressed concern that although this data can be abstracted, there are fess associated with participating in this registry (ranging from $2900-$50,000) which creates an undue burden on physicians/institutions.

4. Use and Usability: H-19; M-3; L-0; I-0

(4a. Accountability/transparency; and 4b. Improvement – progress demonstrated; and 4c. Benefits outweigh evidence of unintended negative consequences)

Rationale:

- This measure is currently used in the Blue Distinction Centers for Cardiac Care program, a national designation program that recognizes hospitals that demonstrate expertise in delivering quality specialty care, safely and effectively.

5. Related and Competing Measures

- This measure directly competes with:
  - 0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients.

  The only difference in specifications is that this clinician-level measure has additional exceptions for medical reasons, patient reasons and system reasons. Committee member also noted that attribution may be an issue as it is not clear how often the discharge medications are prescribed by the operator doing the PCI, rather than another cardiologist or primary provider. Committee members were divided on whether to include the clinician-level of analysis in measure 0964 rather than having a separate measure. The need for complete harmonization was emphasized.

Standing Committee Recommendation for Endorsement: Y-11; N-11

Rationale

- During the in-person meeting post call, the Committee did not reach consensus on this measure. It was determined that this measure will be posted for public commenting and at that time, these comments will be reviewed for consideration by the Committee.
- ~~During~~After the post-comment call, the Committee reviewed and discussed the comments receive and voted to recommend this measure for endorsement. The voting results are below:
  - Yes- 16 ; No- 2

6. Public and Member Comment: May 27, 2014- June 25, 2014

Comments Received:

- Comments received for this measure addressed the harmonization of medication in related measures

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2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
(measures 2452 and 2379), specifically drugs for oral anti-platelet medications; and data collection for adherence to medication. Additionally, a commenter suggested revising the process measure to capture adherence rather than assessing if the medication was prescribed. They noted it would help to enhance feasibility of pharmacy claims to be used in assessing P2Y12 agent and statin adherence. Committee's Response: • The Committee agreed that adherence measures are important. New measure *#2379 Adherence to Anti-platelet Therapy after Stent Implementation* measures adherence for P2Y12 agents. NQF endorsed *measure # 0543 Adherence to Statin Therapy for Individuals with Coronary Artery Disease* addresses adherence to statins in this population. The biggest difficulty is with aspirin which would not be captured. • After a review of the comments, the committee voted for endorsement of the measure. The voting results are below: o Yes- 16 ; No- 2 • The measure is recommended for endorsement and pursuant with NQF process will be posted for NQF member voting.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

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Measures Not Recommended

0286 Aspirin at Arrival
Submission | Specifications
Description: Percentage of emergency department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) without aspirin contraindications who received aspirin within 24 hours before ED arrival or prior to transfer. **Numerator Statement**: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer **Denominator Statement**: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) without aspirin contraindications Included Populations: • An E/M Code for emergency department encounter as defined in Appendix A, Table 1.0, and • Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and • An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain Excluded Populations: •Patients less than 18 years of age •Patients with a documented Reason for No Aspirin on Arrival Data Elements: •Birthdate •Discharge Code •E/M Code •ICD-9-CM Other Diagnosis Codes •ICD-9-CM Principal Diagnosis Code •Outpatient Encounter Date

0286 Aspirin at Arrival

•Probable Cardiac Chest Pain
•Reason for No Aspirin on Arrival
Exclusions: Excluded Populations:
- Patients less than 18 years of age
- Patients with a documented Reason for No Aspirin on Arrival

Adjustment/Stratification: None
Level of Analysis: Facility, Population : National
Setting of Care: Hospital/Acute Care Facility
Type of Measure: Process
Data Source: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: <u>The measure does not meet the Importance criteria</u>
(1a. Evidence: 1b. Performance Gap, 1c. High Priority)
1a. Evidence: **H-15**; **M-6**; **L-0; IE-0; I-**0; 1b. Performance Gap: **H-2**; **M-7**; **L-13**; **I-0** 1c. High Priority: **Y-X**; **N-X;**
<u>Rationale</u>:

- Evidence provided by the developer diagrams the relationship of aspirin at arrival to reduction of adverse outcomes based on the ACC/AHA 2012 and 2013 guidelines, class 1, level A recommendations. The developers presented five RCTs and two meta-analysis for unstable angina and Non-STEMI as well as two RCTs for STEMI. The Committee acknowledged the evidence provided to be sufficient.
- The measure currently has a national average of 96.4% adherence. Even at the 25th percentile, the measure is at 100%. At the 10th percentile, the measure is at 87% and at the 5th percentile the measure is at 75%. Data on disparities showed adherence for Whites, African Americans, and Hispanics at 95% and higher.
- The Committee agreed that although the measure's performance has been very high, it is topped out with a minimal performance gap in of care.

2. Scientific Acceptability of Measure Properties:
(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)
2a. Reliability: **H-X**; **M-X**; **L-X**; **I-X** 2b. Validity: **H-X**; **M-X**; **L-X**; **I-X**
<u>Rationale</u>:

- N/A

3. Feasibility: H-X; M-X; L-X; I-X
(3a. Data generated during care; 3b. Electronic sources; and 3c. Data collection can be implemented (eMeasure feasibility assessment of data elements and logic)
<u>Rationale</u>:

- N/A

4. Use and Usability: H-X; M-X; L-X; I-X
(4a. Accountability/transparency; and 4b. Improvement – progress demonstrated; and 4c. Benefits outweigh

0286 Aspirin at Arrival

evidence of unintended negative consequences)

Rationale:

- N/A

5. Related and Competing Measures

- No related or competing measures noted.

Standing Committee Recommendation for Endorsement: Y-X; N-X

Rationale:

- The Committee did not recommend this measure for endorsement since it did not pass importance, which is a must past criteria.

6. Public and Member Comment: May 27, 2014- June 25, 2014

There was one comment received for this measure:

- The commenter suggested that there be an alternative to the removal of NQF endorsement for "topped out" measures. The commenter highlighted there may instances where a previously endorsed NQF measure is still needed and in use and removal of the endorsement gives the impression that the measure is no longer credible, reliable or lacks evidence when that may not be the case.

NQF response:

- In 2011 NQF establish the "inactive endorsement with reserve status" for measures that meet all other criteria except "1B. Opportunity for Improvement" (hyperlink: here).

Committee response:

- The Committee considered the option of reserve status for this measure but ultimately decided not to recommend the Reserve status option. After review of this comment the Committee further noted that they had concerns about the reliability of of capturing the 11 required data elements and specifically identifying patients with "probable chest pain". The developers indicated that they are in the process of re-specifying the measure for EHRs and again noted difficulty with capturing "probable cardiac chest pain." Now that the measure has reached high levels of performance, the Committee did not think the the challenges with abstracting the data were outweighed by the benefit and decided the measure did not qualify for Reserve status.

7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X

8. Board of Directors Vote: Y-X; N-X

9. Appeals

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0289 Median Time to ECG

Submission | Specifications

Description: Median time from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with

Probable Cardiac Chest Pain).

Numerator Statement: Continuous Variable Statement:

Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain)

Included Populations:

• ICD-9-CM Principal or Other Diagnosis Code for AMI as defined in Appendix A1, OP Table 6.1 or an ICD-9-CM Principal or Other Diagnosis Code for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A1, OP Table 6.1a, and

0289 Median Time to ECG
• E/M Code for emergency department encounter as defined in Appendix A1, OP Table 1.0a, and • Patients receiving an ECG as defined in the Appendix A1, and • Patients discharged/transferred to a short term general hospital for inpatient care, to a Federal healthcare facility, or to a Critical Access Hospital. Excluded Populations: Patients less than 18 years of age **Denominator Statement**: Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for AMI or Chest Pain patients (with Probable Cardiac Chest Pain). Included Populations: •An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and •Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and •An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a, and •Patients receiving an ECG Excluded Populations: •Patients less than 18 years of age Data Elements: •Arrival Time •Birthdate •Discharge Code •E/M Code •ECG •ECG Date •ECG Time •ICD-9-CM Other Diagnosis Codes •ICD-9-CM Principal Diagnosis Code •Outpatient Encounter Date •Probable Cardiac Chest Pain **Exclusions**: • Patients LESS THAN 18 years of age **Adjustment/Stratification**: None **Level of Analysis:** Facility, Population : National **Setting of Care:** Hospital/Acute Care Facility **Type of Measure**: Efficiency **Data Source**: Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records **Measure Steward**: Centers for Medicare & Medicaid Services
STANDING COMMITTEE MEETING [04/21/2014—4/22/2014] **1. Importance to Measure and Report: <u>The measure does not meet the Importance criteria</u>** (1a. Evidence: 1b. Performance Gap, 1c. High Priority) 1a. Evidence: **H-0**; **M-2**; **L-12; I-1; IE-7;** I-X; 1b. Performance Gap: **H-X**; **M-X**; **L-X**; **I-X** 1c. High Priority: **Y-X**; **N-X;** <u>Rationale</u>: • The developers presented a systemic review based on the ACC/AHA guidelines that shows decreased in

0289 Median Time to ECG
time to ECG can lead to rapid identification which can increase reperfusion earlier, if indicated. Specific health outcomes were not included. • The Committee agreed the evidence provided was not sufficient for the importance criteria. The evidence provided did not link decrease in time to ECG directly to improved outcome. Committee members also questioned the use of this process measure given that there are already outcome measures available. • Committee members were unclear as to why the whole population was included based on expert evidence even though there is only good evidence for the STEMI population. • Additionally, AMIs account for 10-15% of chest pain, 1/3 of which are STEMI. There were concerns that by including patient's age 18 or greater in the denominator, it could potentially lead to diversion of resources to younger patients who are unlikely to have STEMI, as STEMI is more common in older patients.
2. Scientific Acceptability of Measure Properties: (2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity) 2a. Reliability: **H-X**; **M-X**; **L-X**; **I-X** 2b. Validity: **H-X**; **M-X**; **L-X**; **I-X** Rationale: • N/A
3. Feasibility: H-X; M-X; L-X; I-X *(3a. Data generated during care; 3b. Electronic sources; and 3c. Data collection can be implemented (eMeasure feasibility assessment of data elements and logic)* Rationale: • N/A
4. Use and Usability: H-X; M-X; L-X; I-X *(4a. Accountability/transparency; and 4b. Improvement – progress demonstrated; and 4c. Benefits outweigh evidence of unintended negative consequences)* Rationale: • N/A
5. Related and Competing Measures • No related or competing measures noted.
Standing Committee Recommendation for Endorsement: **Y-X**; **N-X** Rationale: • The Committee did not recommend this measure for endorsement since it did not pass importance, which is a must past criteria.
6. Public and Member Comment: May 27, 2014- June 25, 2014 There were no public or member comments received for this measure.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

0521 Heart Failure Symptoms Assessed and Addressed

Submission | Specifications

Description: Percentage of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure, and appropriate actions were taken when the patient exhibited symptoms of heart failure

Numerator Statement: Number of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure and appropriate actions were taken when the patient exhibited symptoms of heart failure.

Denominator Statement: Number of home health episodes of care ending with a discharge or transfer to inpatient facility during the reporting period for patients with a diagnosis of heart failure, other than those covered by generic or measure-specific exclusions.

Exclusions: Episodes in which the patient did not have a diagnosis of heart failure and was not assessed to have symptoms of heart failure since the last OASIS assessment. Episodes ending in patient death.

Adjustment/Stratification: None

Level of Analysis: Facility

Setting of Care: Home Health

Type of Measure: Process

Data Source: Electronic Clinical Data

Measure Steward: Centers for Medicare & Medicaid Services

STANDING COMMITTEE MEETING [04/21/2014—4/22/2014]

1. Importance to Measure and Report: The measure does not meet the Importance criteria

(1a. Evidence: 1b. Performance Gap, 1c. High Priority)

1a. Evidence: **H-0**; **M-4**; **L-9; I-1; IE-6;** I-X; 1b. Performance Gap: **H-X**; **M-X**; **L-X**; **I-X** 1c. High Priority: **Y-X**; **N-X;**

Rationale:

- Evidence provided by the developer included a systematic review that assessed heart failure symptoms and appropriate follow-up care to influence health outcomes for utilization. The developers presented guidelines from the Heart Failure Society of America specific to patient and family education for self-care (Grade B) and recognition of heart failure symptoms and when to call the provider (Grade B). The developer did not include guidelines for clinician assessment of heart failure symptoms and no QQC was included.
- The Committee acknowledged the lack of evidence with the measure, as there is no evidence that performing the measure leads to improved outcomes. As such, the Committee agreed the measure merited a rating of low for evidence.
- Although Committee members agreed that a home health heart failure evaluation is important, the Committee members expressed concerns that assessment alone is not linked to improved outcomes.

2. Scientific Acceptability of Measure Properties:

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity)

2a. Reliability: **H-X**; **M-X**; **L-X**; **I-X** 2b. Validity: **H-X**; **M-X**; **L-X**; **I-X**

Rationale:

- N/A

3. Feasibility: H-X; M-X; L-X; I-X

(3a. Data generated during care; 3b. Electronic sources; and 3c. Data collection can be implemented (eMeasure

0521 Heart Failure Symptoms Assessed and Addressed
feasibility assessment of data elements and logic) Rationale: • N/A
4. Use and Usability: H-X; M-X; L-X; I-X *(4a. Accountability/transparency; and 4b. Improvement – progress demonstrated; and 4c. Benefits outweigh evidence of unintended negative consequences)* Rationale: • N/A
5. Related and Competing Measures • No related or competing measures noted.
Standing Committee Recommendation for Endorsement: **Y-X**; **N-X** Rationale: • The Committee did not recommend this measure for endorsement since it did not pass importance, which is a must past criteria.
6. Public and Member Comment: May 27, 2014- June 25, 2014 There were no public or member comments received for this measure.
7. Consensus Standards Approval Committee (CSAC) Vote: Y-X; N-X; A-X
8. Board of Directors Vote: Y-X; N-X
9. Appeals

Measures Withdrawn from Consideration

5 measures previously endorsed by NQF have not been re-submitted or withdrawn from maintenance of endorsement. The following measures are being retired from endorsement:

Measure	Reason for retirement
0077 Heart Failure (HF): Assessment of Activity Level	Developer submitted a new measure for endorsement, Measure #2450 Heart Failure: Symptom and Activity Assessment, which is intended to replace measure 0077 and 0078 with the intention of providing a more comprehensive assessment of patient status.
0078: Heart Failure (HF) : Assessment of Clinical Symptoms of Volume Overload (Excess)	Developer submitted a new measure for endorsement, Measure #2450 Heart Failure: Symptom and Activity Assessment, which is intended to replace measure 0077 and 0078 with the intention of providing a more comprehensive assessment of patient status.
0093: Emergency Medicine: 12-Lead Electrocardiogram (ECG) Performed for Syncope	The developer reviewed the measure's performance data currently performing at 96.48% nationally and concluded the measure data would fail to meet the performance gap sub-criterion within the "importance to measure and report" evaluation criterion.
0132: Aspirin at arrival for acute myocardial infarction (AMI)	Measure has been suspended from the Inpatient Quality Reporting program (IQR) for several years, with only voluntary reporting. CMS is considering removing it from IQR in the next rulemaking cycle and have no plans to continue with endorsement of the measure.
0664: Patient(s) with an emergency medicine visit for syncope that had an ECG.	Developer will not be maintaining the measure going forward.

One additional new measure was withdrawn after initial submission.

Measure	Reason for withdrawal
2458: Heart Failure (HF)- Left Ventricular Function (LVF) Testing	Developer reviewed related and competing NQF-endorsed measures (#0079 and #0135) and determined the endorsed measures already reached the PQRS goal of meeting the needs of Eligible Providers to promote reporting and quality information, therefore an additional measure is not needed.

Appendix B: NQF Cardiovascular Portfolio and related measures

Patient-focused Episode of Care for Coronary Artery Disease and Acute Myocardial Infarction (AMI)

Measures in red are newly submitted for consideration for endorsement by the Cardiovascular Standing Committee in 2014.

**Measures applicable to patients within the CAD/AMI episode of care framework that are not in the Cardiovascular portfolio.*

NQF-endorsed measures for patients with CAD/AMI

Population at Risk: Primary Prevention

- 2020*: Adult Current Smoking Prevalence
- 0028*: Preventive Care & Screening: Tobacco Use: Screening & Cessation Intervention
- 0018: Controlling High blood Pressure
- 1552: Blood Pressure Screening by age 13
- 1553: Blood Pressure Screening by age 18
- 1927: Cardiovascular health screening for people with schizophrenia or bipolar disorder who are prescribed antipsychotic medications
- 1933: Cardiovascular monitoring for people with cardiovascular disease and schizophrenia

Population at Risk: Secondary Prevention

- 0073: IVD: Blood Pressure Management
- 0067: Chronic Stable Coronary Artery Disease: Antiplatelet Therapy
- 0068: Ischemic Vascular Disease (IVD): Use of Aspirin or another Antithrombotic
- 0066: Chronic Stable Coronary Artery Disease: ACE Inhibitor or ARB Therapy--Diabetes or Left Ventricular Systolic Dysfunction (LVEF <40%)
- 0074: Chronic Stable Coronary Artery Disease: Lipid Control
- 0075: IVD: Complete Lipid Profile and LDL Control <100
- 0076: Optimal Vascular Care [composite]
- 0543: Coronary Artery Disease and Medication Possession Ratio for Statin Therapy
- 0569: Adherence to Lipid Lowering Medication

Acute Phase

Acute Myocardial Infarction

- 0092: Emergency Medicine: Aspirin at Arrival for Acute Myocardial Infarction (AMI) [clinician]
- 0132: Aspirin at arrival for acute myocardial infarction (AMI) [hospital]
- 0286: Aspirin at Arrival [hospital for patients being transferred]
- 0289: Median Time to ECG [hospital for patients being transferred]
- 0290: Median Time to Transfer to Another Facility for Acute Coronary Intervention

- 0090: Electrocardiogram Performed for Non-Traumatic Chest Pain [clinician]
- 0163: Primary PCI received within 90 minutes of hospital arrival
- 0164: Fibrinolytic Therapy received within 30 minutes of hospital arrival
- 0288: Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival [hospital for patients being transferred]
- 2377: Defect free care for AMI [composite measure]

Outcomes

- 0230: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older
- 2473: Hospital 30-day Risk-standardized AMI Mortality eMeasure
- 0505*: Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization
- 0704: Proportion of Patients Hospitalized with AMI that have a Potentially Avoidable Complication (during the Index Stay or in the 30-day Post-Discharge Period)
- 0730: Acute Myocardial Infarction (AMI) Mortality Rate

Percutaneous Coronary Intervention (PCI)

- 2411: Comprehensive documentation for Indications for PCI
- 2459: In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
- 0133: In-hospital Risk-Adjusted Rate of Mortality for Patients Undergoing PCI
- 0535: 30-day all-cause risk-standardized mortality rate following PCI for patients without STEMI and without cardiogenic shock
- 0536: 30-day all-cause risk-standardized mortality rate following PCI for patients with STEMI or cardiogenic shock

Coronary Artery Bypass Graft surgery* (these related measures are in NQF's Surgery portfolio)

- 0128 Duration of Antibiotic Prophylaxis for Cardiac Surgery Patients
- 0126 Selection of Antibiotic Prophylaxis for Cardiac Surgery Patients
- 0127 Preoperative Beat Blockade
- 0114 Risk-Adjusted Post-operative Renal Failure
- 0115 Risk-Adjusted Surgical Re-exploration
- 0119 Risk-Adjusted Operative Mortality for CABG
- 0122 Risk-Adjusted Operative Mortality MV Replacement + CABG Surgery
- 0123 Risk-Adjusted Operative Mortality for Aortic Valve Replacement (AVR) + CABG Surgery
- 1502 Risk-Adjusted Operative Mortality for MV Repair + CABG Surgery
- 0129 Risk-Adjusted Prolonged Intubation (Ventilation)
- 0130 Risk-Adjusted Deep Sternal Wound Infection Rate
- 0131 Risk-Adjusted Stroke/Cerebrovascular Accident
- 0134 Use of Internal Mammary Artery (IMA) in Coronary Artery Bypass Graft (CABG)
- 0116 Anti-Platelet Medication at Discharge
- 0117 Beta Blockade at Discharge
- 0118 Anti-Lipid Treatment Discharge
- 0696 The STS CABG Composite Score

Post-Acute/Rehabilitation Phase

- 0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients [facility]
- 2452: PCI: Post-procedural Optimal Medical Therapy [clinician]
- 2379: Adherence to antiplatelet therapy after stent implantation
- 0642: Cardiac Rehabilitation Patient Referral From an Inpatient Setting
- 0643: Cardiac Rehabilitation Patient Referral From an Outpatient Setting

Population at Risk: Secondary Prevention

- 0160: Beta-blocker prescribed at discharge for AMI
- 0117: Beta-blocker at Discharge
- 0070: Chronic Stable Coronary Artery Disease: Beta-Blocker Therapy--Prior Myocardial Infarction (MI) or Left Ventricular Systolic Dysfunction (LVEF <40%)
- 1528: Beta Blocker at Discharge for ICD implant patients with a previous MI
- 0071: Persistence of Beta-Blocker Treatment After a Heart Attack
- 0141: Aspirin prescribed at discharge for AMI
- 0142: Aspirin prescribed at discharge for AMI
- 0116: Anti-Platelet Medication at Discharge
- 0137: ACEI or ARB for left ventricular systolic dysfunction- AMI Patients
- 0594: Post MI: ACE inhibitor or ARB therapy
- 0639: Statin Prescribed at Discharge
- 0118: Anti- Lipid Treatment Discharge
- 0543: Adherence to Statin Therapy for Individuals with Coronary Artery Disease
- 0569: Adherence to Statins

Cardiac Imaging

- 0672 Cardiac stress imaging not meeting appropriate use criteria: Testing in asymptomatic, low risk patients
- 0669 Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery
- 0670 Cardiac stress imaging not meeting appropriate use criteria: Preoperative evaluation in low risk surgery patients
- 0671 Cardiac stress imaging not meeting appropriate use criteria: Routine testing after percutaneous coronary intervention (PCI)

Cost and Resource Use

- 1558*: Relative Resource Use for People with Cardiovascular Conditions

Patient-focused Episode of Care for Heart Failure (draft)

NQF –endorsed measures for Heart Failure patients

Population at Risk:

- 2020*: Adult Current Smoking Prevalence
- 0028*: Preventive Care & Screening: Tobacco Use: Screening & Cessation Intervention
- 0421: Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up
- 0018: Controlling High Blood Pressure

Evaluation and On-going Management:

- 2450: Heart Failure: Symptom and Activity Assessment
- 0079: Left Ventricular Ejection Fraction Assessment (Outpatient Setting)
- 0081: Heart Failure: Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction
- 0610: Heart Failure - Use of ACE Inhibitor (ACEI) or Angiotensin Receptor Blocker (ARB) Therapy
- 0083: Heart Failure : Beta-blocker therapy for Left Ventricular Systolic Dysfunction
- 0615: Heart Failure - Use of Beta Blocker Therapy
- 0521: Heart Failure Symptoms Assessed and Addressed [home health]

Acute Phase/ Hospitalization

- 0277*: Heart Failure Admission Rate (PQI 8)
- 0135: Evaluation of Left Ventricular Systolic Function (LVS) [hospital]
- 2458: Heart Failure: Left Ventricular Function (LVF) Testing [clinician]
- 0162: ACEI or ARB for left ventricular systolic dysfunction- Heart Failure (HF) Patients
- 2455: Heart Failure: Post-Discharge Appointment for Heart Failure Patients
- 0330*: Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure hospitalization
- 0229: Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart failure (HF) hospitalization for patients 18 and older
- 0358: Congestive Heart Failure (CHF) Mortality Rate (IQI 16)

Heart Rhythm Disorders

- 0093 Electrocardiogram Performed for Syncope

Atrial Fibrillation

- 1525 Chronic Anticoagulation Therapy
- 1524 Assessment of Thromboembolic Risk Factors (CHADS2)

Implantable Cardioverter Defibrillator ICD)

- 1522 ACE/ARB Therapy at Discharge for ICD implant patients with LVSD
- 1528 Beta Blocker at Discharge for ICD implant patients with a previous MI
- 1529 Beta Blocker at Discharge for ICD implant patients with LVSD
- 0965: Patients with an ICD implant who receive prescriptions for all medications (ACE/ARB and beta blockers) for which they are eligible for at discharge
- 0694: Hospital Risk-Standardized Complication Rate following Implantation of Implantable Cardioverter-Defibrillator (ICD)

Cardiac catheterization

- 0355: Bilateral Cardiac Catheterization Rate (IQI 25)
- 0715: Standardized adverse event ratio for children and adults undergoing cardiac catheterization for congenital heart disease

Hypertension

- 0018: Controlling High blood Pressure
- 1552: Blood Pressure Screening by age 13
- 1553: Blood Pressure Screening by age 18

Appendix C: Cardiovascular Portfolio—Use In Federal Programs

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0018	Controlling High Blood Pressure	Initial Core Set of Health Care Quality Measures for Medicaid-Eligible Adults; Meaningful Use (EHR Incentive Program) - Eligible Professionals; Medicare Part C Plan Rating; Medicare Shared Savings Program; Physician Quality Reporting System (PQRS)
0066	Chronic Stable Coronary Artery Disease: ACE Inhibitor or ARB Therapy--Diabetes or Left Ventricular Systolic Dysfunction (LVEF <40%)	Medicare Shared Savings Program; Physician Feedback; Physician Quality Reporting System (PQRS)
0067	Chronic Stable Coronary Artery Disease: Antiplatelet Therapy	Physician Feedback; Physician Quality Reporting System (PQRS)
0068	Ischemic Vascular Disease (IVD): Use of Aspirin or another Antithrombotic	Meaningful Use (EHR Incentive Program) - Eligible Professionals; Medicare Shared Savings Program; Physician Feedback; Physician Quality Reporting System (PQRS); HRSA
0070	Chronic Stable Coronary Artery Disease: Beta-Blocker Therapy--Prior Myocardial Infarction (MI) or Left Ventricular Systolic Dysfunction (LVEF <40%)	Meaningful Use (EHR Incentive Program) - Eligible Professionals; Physician Feedback; Physician Quality Reporting System (PQRS)
0074	Chronic Stable Coronary Artery Disease: Lipid Control	Medicare Shared Savings Program; Physician Feedback; Physician Quality Reporting System (PQRS)
0075	IVD: Complete Lipid Profile and LDL Control <100	Meaningful Use (EHR Incentive Program) - Eligible Professionals; Medicare Part C Plan Rating; Medicare Shared Savings Program; Physician Quality Reporting System (PQRS)

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0079	Heart Failure: Left Ventricular Ejection Fraction Assessment (Outpatient Setting)	Physician Feedback; Physician Quality Reporting System (PQRS)
0081	Heart Failure: Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction	Meaningful Use (EHR Incentive Program) - Eligible Professionals; Physician Feedback; Physician Quality Reporting System (PQRS)
0083	Heart Failure : Beta-blocker therapy for Left Ventricular Systolic Dysfunction	Meaningful Use (EHR Incentive Program) - Eligible Professionals; Medicare Shared Savings Program; Physician Feedback; Physician Quality Reporting System (PQRS)
0090	Electrocardiogram Performed for Non-Traumatic Chest Pain	Physician Feedback; Physician Quality Reporting System (PQRS)
0092	Aspirin at Arrival of AMI	Physician Feedback; Physician Quality Reporting System (PQRS)
0093	Electrocardiogram Performed for Syncope	Physician Feedback; Physician Quality Reporting System (PQRS)
0135	Evaluation of Left ventricular systolic function (LVS)	Hospital Inpatient Quality Reporting; HRSA
0142	Aspirin prescribed at discharge for AMI	Hospital Inpatient Quality Reporting; Meaningful Use (EHR Incentive Program) - Hospitals, CAHs
0162	ACEI or ARB for left ventricular systolic dysfunction - Heart Failure (HF) Patients	Hospital Inpatient Quality Reporting; HRSA

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0163	Primary PCI received within 90 minutes of Hospital Arrival	Hospital Inpatient Quality Reporting; Hospital Value-Based Purchasing; Meaningful Use (EHR Incentive Program) - Hospitals, CAHs
0164	Fibrinolytic Therapy received within 30 minutes of hospital arrival	Hospital Inpatient Quality Reporting; Hospital Value-Based Purchasing; Meaningful Use (EHR Incentive Program) - Hospitals, CAHs; HRSA
0229	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart failure (HF) hospitalization for patients 18 and older	Hospital Inpatient Quality Reporting; Hospital Value-Based Purchasing
0230	Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older	Hospital Inpatient Quality Reporting; Hospital Value-Based Purchasing
0286	Aspirin at Arrival	Hospital Outpatient Quality Reporting; HRSA
0288	Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival	Hospital Outpatient Quality Reporting; HRSA
0289	Median Time to ECG	Hospital Outpatient Quality Reporting; HRSA

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0290	Median Time to Transfer to Another Facility for Acute Coronary Intervention	Hospital Outpatient Quality Reporting; HRSA
0521	Heart Failure Symptoms Addressed	Home Health Quality Reporting
0639	Statin Prescribed at Discharge	Hospital Inpatient Quality Reporting; Meaningful Use (EHR Incentive Program) - Hospitals, CAHs
0643	Cardiac Rehabilitation Patient Referral From an Outpatient Setting	Hospital Outpatient Quality Reporting; Physician Quality Reporting System (PQRS)
0669	Cardiac Imaging for Preoperative Risk Assessment for Non-Cardiac Low-Risk Surgery	Hospital Outpatient Quality Reporting
0670	Cardiac stress imaging not meeting appropriate use criteria: Preoperative evaluation in low risk surgery patients	Physician Quality Reporting System (PQRS)
0671	Cardiac stress imaging not meeting appropriate use criteria: Routine testing after percutaneous coronary intervention (PCI)	Physician Quality Reporting System (PQRS)

NQF #	Title	Federal Programs: Current Finalized 2013-2014
0672	Cardiac stress imaging not meeting appropriate use criteria: Testing in asymptomatic, low risk patients	Physician Quality Reporting System (PQRS)
1525	Chronic Anticoagulation Therapy	Physician Quality Reporting System (PQRS)

Appendix D: Cardiovascular Standing Committee and NQF Staff

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Appendix E: Implementation Comments

Comments received as of February 18, 2014

Topic	Commenter	Comment
0964-Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	Submitted by Dr. Kathy Gans-Brangs, PhD	From AstraZeneca: We recommend adding ticagrelor to the list of P2Y12 agents. BRILINTA is an FDA approved P2Y12 platelet inhibitor indicated to reduce the rate of thrombotic cardiovascular (CV) events in patients with acute coronary syndrome (ACS), when given with maintenance doses of aspirin less than 100 mg. In patients treated with percutaneous coronary intervention (PCI), it also reduces the rate of stent thrombosis. Supporting Information : The safety and efficacy of BRILINTA was evaluated in PLATO, a multicenter, randomized, double-blind study comparing ticagrelor to clopidogrel in 18,624 patients with ACS.1,2 At 12 months, the rate of CV death/MI/stroke was 9.8% for ticagrelor vs 11.7% for clopidogrel resulting in a relative risk reduction of 16% (p<0.001). The difference between treatments was driven by CV death and MI with no difference in stroke. The relative risk reduction of CV death was 21% and MI was 16% for ticagrelor vs clopidogrel (p=0.0013 and p=0.0045, respectively).1, 2 In PLATO, 11,289 (60.6%) patients either had a previous stent implanted (n=1404) or underwent stent implantation during the study (n=9885).7There was a lower risk of stent thrombosis with ticagrelor (1.3% for adjudicated “definite”) than w/ clopidogrel (1.9%) (hazard ratio [HR], 0.67; 95% CI, 0.50-0.91; p=0.009).1,2,3Results were similar for drug-eluting stents and bare metal stents.3 The reduction in definite stent thrombosis with ticagrelor was numerically greater for late [> 30 days: HR 0.48, (CI 0.24 – 0.96)], and subacute [24 h – 30 days: HR 0.60, (CI 0.39 – 0.93)] vs. acute stent thrombosis [< 24 h: HR 0.94 (CI 0.43 – 2.05)]. 1. BRILINTA Prescribing Information. 2. Wallentin L et al for the PLATO Investigators. Ticagrelor versus clopidogrel in patients with acute coronary syndromes. NEJM 2009;361:1045-1057. 3. Steg PG et al. Stent thrombosis with ticagrelor versus clopidogrel in patients with acute coronary syndromes: an analysis from the prospective, randomized PLATO trial. Circ. 2013;128:1055-1065.

		Please refer to the BRILINTA Prescribing Information for Boxed Warnings related to increased risk of bleeding and reduced effectiveness with maintenance doses of ASA greater than 100 mg per day.
0964-Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	Submitted by Dr. Kathy Gans-Brangs, PhD	From AstraZeneca: REQUEST FOR HARMONIZATION OF SIMILAR MEASURES -- We believe that revisions like the one NQF is currently undertaking present an opportunity to conduct a more thorough harmonization of all measures in a particular class. So, for example, we would recommend that all measures mentioned as competing by the developers in Section 5a, Harmonization, of the response forms be reviewed by the Expert Panel at the same time. A comprehensive review of a set of competing measures related to specific treatments (e.g., PCI and CAD) would allow for continuity and consistency that results in a stronger suite of measures that do not read as if they have been cobbled together over time. COMPETITIVE MEASURE ISSUE, REQUEST FOR CONSISTENCY IN SPECIFICITY -- In reviewing the measures for this pre-comment period, we recognize an inconsistency that dates the measures before they are re-endorsed; NQF sometimes endorses measures which list specific agents and other times stay at the class level. Sometimes, inconsistency exists within a single measure as seen with Measure #0964: Therapy with P2Y12, ASA, statin at discharge. Three agents, described as P2Y12 inhibitors, are called out by name, but statins are not, and P2Y12 inhibitor(s) approved by FDA after data collection are not mentioned. Further, measure #0964 is not current in its list of approved P2Y12 agents and is inconsistent with measures including #2379 that list 3 different agents as P2Y12 inhibitors. Further, Measure #2379 notes that "obsolete drug products are excluded from NDCs with an inactive date more than 3 years prior to the beginning of the measurement period or look-back period, if applicable" (section 5.6, page 8/18). Not including agents at the class

		level can lead to provider confusion as noted in public comments submitted to NQF on measures # 0067, 0068 and 0230 during its Cardiovascular Endorsement Maintenance 2010 comment period. We do support NQF in using the approach that it feels is best, but specificity does require continuous updating to capture products that are approved by the FDA.
# 2379- Adherence to Antiplatelet Therapy after Stent Implantation	Submitted by Dr. Kathy Gans-Brangs, PhD	From AstraZeneca: REQUEST FOR HARMONIZATION OF SIMILAR MEASURES -- We believe that revisions like the one NQF is currently undertaking present an opportunity to conduct a more thorough harmonization of all measures in a particular class. So, for example, we would recommend that all measures mentioned as competing by the developers in Section 5a, Harmonization, of the response forms be reviewed by the Expert Panel at the same time. A comprehensive review of a set of competing measures related to specific treatments (e.g., PCI and CAD) would allow for continuity and consistency that results in a stronger suite of measures that do not read as if they have been cobbled together over time. COMPETITIVE MEASURE ISSUE, REQUEST FOR CONSISTENCY IN SPECIFICITY -- In reviewing the measures for this pre-comment period, we recognize an inconsistency that dates the measures before they are re-endorsed; NQF sometimes endorses measures which list specific agents and other times stay at the class level. Sometimes, inconsistency exists within a single measure as seen with Measure #0964: Therapy with P2Y12, ASA, statin at discharge. Three agents, described as P2Y12 inhibitors, are called out by name, but statins are not, and P2Y12 inhibitor(s) approved by FDA after data collection are not mentioned. Further, measure #0964 is not current in its list of approved P2Y12 agents and is inconsistent with measures including #2379 that list 3 different agents as P2Y12 inhibitors. Further, Measure #2379 notes that "obsolete drug products are excluded from NDCs with an inactive date more than 3 years prior to the beginning of the measurement period or look-back period, if applicable" (section 5.6, page 8/18). Not including agents at the class

		level can lead to provider confusion as noted in public comments submitted to NQF on measures # 0067.

Appendix F: Measure Specifications

	0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Percentage of patients admitted to a hospital with a primary diagnosis of an acute myocardial infarction or chronic stable angina or who during hospitalization have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery (CVS), or cardiac transplantation who are referred to an early outpatient cardiac rehabilitation/secondary prevention program.
Type	Process
Data Source	Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry American College of Cardiology PINNACLE registry and AACVPR/ACC/AHA Cardiac Rehabilitation Testing (CR3) Project. Available in attached appendix at A.1 Attachment 0642_Data_Dictionaries_NQF_submissions.pdf
Level	Facility, Clinician : Individual, Integrated Delivery System
Setting	Hospital/Acute Care Facility, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility
Time Window	Inpatient Hospitalization
Numerator Statement	Number of eligible patients with a qualifying event/diagnosis who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention (CR/SP) program prior to hospital discharge or have a documented medical or patient-centered reason why such a referral was not made. (Note: The program may include a traditional CR/SP program based on face-to-face interactions and training sessions or may include other options such as home-based approaches. If alternative CR/SP approaches are used, they should be designed to meet appropriate safety standards and deliver effective, evidence-based services.)
Numerator Details	Qualifying events include all patients hospitalized with primary diagnosis of myocardial infarction (MI), chronic stable angina, or who during hospitalization have undergone coronary artery bypass graft surgery (CABG), percutaneous coronary intervention (PCI), cardiac valve surgery, and/or heart transplantation. A referral is defined as an official communication between the healthcare provider and the patient to recommend and carry out a referral order to an early outpatient cardiac rehabilitation program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an early outpatient cardiac rehabilitation program. This also includes a communication between the healthcare provider or healthcare system and the cardiac rehabilitation program that includes the patient's enrollment information for the program. A hospital discharge summary or office note may be potentially formatted to include the necessary patient information to communicate to the cardiac rehabilitation program [the patient's cardiovascular history, testing, and treatments, for instance.] All communications must maintain appropriate confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act (HIPAA).
Denominator Statement	Number of hospitalized patients in the reporting period hospitalized with a qualifying cardiovascular disease event/diagnosis who do not meet any of the criteria listed in the denominator exclusion section below.
Denominator Details	Patients with a qualifying event who are to be discharged for a short-term stay in an inpatient medical rehabilitation facility are still expected to be referred to an outpatient cardiac rehabilitation program by the inpatient team during the index hospitalization. This referral should be reinforced by the care team at the medical rehabilitation facility.

	0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
Exclusions	Exceptions criteria require documentation of one or more of the following factors that may prohibit cardiac rehabilitation participation: Patient factors (e.g., patient resides in a long-term nursing care facility). Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition). Health care system factors (e.g., no cardiac rehabilitation/secondary prevention (CR/SP) program available within 60 min of travel time from the patient's home). The only exclusion criterion for this measure is noted below: Patients who expired before discharge.
Exclusion details	Exclusion: There is only one exclusion criteria (patients who expired before discharge). This information is readily available within the medical record. Exceptions: All eligible patients who can participate in even a low intensity exercise program and who have the cognitive ability to carry out the individualized education and counseling to life-long secondary prevention efforts should be referred to cardiac rehabilitation/secondary prevention programs, because morbidity and mortality benefits extend to nearly all patient populations, regardless of age or co-morbidities. As a result, the exception examples included in the performance measure relate to either the patient's inability to attend an exercise program (due to physical or practical obstacles) or to cognitive deficits which make them unable to actively participate in exercise or to apply secondary prevention recommendations. Examples, justification, and data collection issues for exceptions for this measure; 1. Patient factors (e.g., patient resides in nursing care facility for long-term care): Patients who reside in a nursing care facility would be expected to receive exercise appropriate to their functional level from that facility, do not need education about compliance with diet or preventive medications, as those are provided by the facility, and are likely to have cognitive deficits that would preclude their own care maintenance related to CR/SP issues. Discharge destination to a nursing care facility is documented in a medical record, included in clinical notes, discharge summaries, discharge orders/instructions, and from demographic information. Note that patients who are discharged to a short-term stay in an inpatient medical rehabilitation facility are expected to be referred to CR/SP and that the referral should be reinforced by the care team at the medical rehabilitation facility. 2. Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition): Medically unstable, life-threatening conditions are contraindications to aerobic exercise and require medical efforts to stabilize and reverse those conditions, rather than efforts directed at secondary prevention of cardiovascular disease. Objective criteria for contraindications to exercise training are included in AHA, ACC, and AACVPR statements and guidelines, which are readily available to practicing clinicians and abstractors. After the condition has been stabilized or reversed, then referral to CR/SP is appropriate. Providers document the specific reason for this exception in clinical notes, summaries and problem lists, which can be abstracted. 3. Health care system factors (e.g., no cardiac rehabilitation program available within 60 minutes of travel time from the patient's home): Although some patients may do so, it is not practical to expect a patient to drive for 2 hours 2 or 3 times per week in order to attend a program that lasts for 1 to 2 hours and research has shown that distance to CR/SP is inversely correlated with attendance We chose 60 minutes (assuming average 30 mph driving speed) based on published data showing that the adjusted odds ratio (OR) to attend CR/SP decreased

	0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
	as the distance from patient zip code to nearest CR/SP facility increased, with the greatest decline between 10.2 (6.5-14.9) miles (OR 0.58) to 31.8 (15.0-231.0) miles (OR 0.29). Although alternative delivery models such as those using telemedicine or home care may be developed in future to provide CR/SP, currently there is no reimbursement for these programs. Therefore, it is unreasonable to hold the provider responsible to refer a patient to a program that he/she is highly unlikely to attend. Providers can determine availability of CR/SP programs from on-line or local resources and document this exception in the medical record. Abstractors can verify the exceptions by cross-referencing the patient's address with publicly available lists of CR/SP program locations.
Risk Adjustment	No risk adjustment or risk stratification N/A
Stratification	Measure was not stratified. Since all patient sub-groups are reported to have low referral rates and low utilization rates for cardiac rehabilitation services, there is no specific requirement to report data on this performance measure in a stratified format. However, medical centers are encouraged to utilize any stratification of their data as they use the performance measure to identify suboptimal processes and also subgroups at particular risk that are under their care. Such stratification could include stratification by gender, ethnicity, and/or age, since these variables have been found to identify subpopulations that are at particular risk for non-referral to CR/SP in some cities and regions.
Type Score	Rate/proportion better quality = higher score
Algorithm	ACC CathPCI Registry calculation: US HOSP= YES Discharge date= present Discharge location=present Discharge referral= present Discharge status= present Exclude any of the below: -Death -PCI <= 0 -"NULL" values ACTION GWTG Registry calculation: US HOSP= YES Discharge date= present Discharge location=present Discharge referral= present Discharge status= present Exclude any of the below: -Death -Comfort measure= present -"NULL" values AACVPR/ACC/AHA Cardiac Rehabilitation Referral Reliability Testing (CR3) Project: Hospital ID present = YES AND Subject ID = YES AND

	0642 Cardiac Rehabilitation Patient Referral From an Inpatient Setting
	*Provider NPI = YES AND Age at start of measurement period is 18 years or older = YES AND Qualifying Event: Myocardial Infarction = YES OR Qualifying Event: Coronary Artery Bypass Graft = YES OR Qualifying Event: Cardiac Valve Surgery = YES OR Qualifying Event: Heart Transplantation = YES OR Qualifying Event: Stable Angina = YES OR Qualifying Event: PCI-stent = YES OR Qualifying Event: PCI- other intervention = YES AND Yes, documentation that patient was referred to CR for this event/diagnosis *Since the data for the CR3 Project were processed through the NCDR-PINNACLE Center, NPI was used to help process the data in accordance with the software used at the Center, which requires an NPI on each report. However, since the purpose of the CR3 Project was to assess reliability of the chart abstraction process and not to assess the variability of CR/SP referral by providers, we opted to analyze the CR/SP referral rates by site, and to use the site NPI for data processing purposes only. No diagram provided
Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: N/A

	2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Percentage of patients, regardless of age, discharged from an inpatient facility to ambulatory care or home health care with a principal discharge diagnosis of heart failure for whom a follow up appointment was scheduled and documented prior to discharge (as specified)
Type	Process
Data Source	Electronic Clinical Data : Registry The data collection instrument is the Get With The Guidelines®-Heart Failure Patient Management Tool.

	2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
	Available in attached appendix at A.1 Attachment S2b_HF_PostDischarge_ValueSets_Dec2013.xls
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	Once at each discharge during the 12-month measurement period
Numerator Statement	Patients for whom a follow up appointment was scheduled and documented prior to discharge including either: - an office visit for management for heart failure with a physician OR advanced practice nurse OR physician assistant OR - a home health visit for management of heart failure
Numerator Details	Numerator Note: Due to the nature of scheduling home health visits, the location and date of the follow-up appointment is sufficient for meeting the measure. For EHR options: eSpecification developed and is included in this submission.
Denominator Statement	All patients, regardless of age, discharged from an inpatient facility (ie, hospital inpatient or observation) to ambulatory care (home/self care) of home health care with a principle discharge diagnosis of heart failure
Denominator Details	For EHR options: eSpecification developed and is included in this submission.
Exclusions	Denominator exclusions include: Patient was discharged to a health care facility for hospice care, to home for hospice care, or to a rehabilitation facility. Patient left against medical advice. Patient expired. Denominator exceptions include: Documentation of medical reason(s) for not documenting that a follow up appointment was scheduled Documentation of patient reason(s) for not documenting that a follow up appointment was scheduled (eg, international patients, patients from state and/or local corrections facilities for whom scheduling the appointment is prohibited)
Exclusion details	The ACCF/AHA and PCPI distinguishes between measure exceptions and measure exclusions. Exclusions arise when the intervention required by the numerator is not appropriate for a group of patients who are otherwise included in the initial patient or eligible population of a measure (ie, the denominator). Exclusions are absolute and are to be removed from the denominator of a measure and therefore clinical judgment does not enter the decision. For this measure, exclusions include patients discharged to a health care facility for hospice care, to home for hospice care, or to a rehabilitation facility. Exclusions also include patients that left against medical advice, and patients who expired. Exclusions, including applicable value sets, are included in the measure specifications. Measure Exceptions Exceptions are used to remove a patient from the denominator of a performance measure when the patient does not receive a therapy or service AND that therapy or service would not be appropriate due to patient-specific reasons. The patient would otherwise meet the denominator criteria. Exceptions are not absolute, and are based on clinical judgment,

	2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
	individual patient characteristics, or patient preferences. The PCPI exception methodology uses three categories of exception reasons for which a patient may be removed from the denominator of an individual measure. These measure exception categories are not uniformly relevant across all measures; for each measure, there must be a clear rationale to permit an exception for a medical,patient, or system reason. Examples are provided in the measure exception language of instances that may constitute an exception and are intended to serve as a guide to clinicians. For this measure, exceptions may include medical reason(s), patient reason(s) (eg, international patients, patients from state and/or local corrections facilities for whom scheduling the appointment is prohibited), or system reason(s) for the patient not receiving a post-discharge appointment. Where examples of exceptions are included in the measure language, value sets for these examples are developed and are included in the eSpecifications. Although this methodology does not require the external reporting of more detailed exception data, the ACCF/AHA and PCPI recommend that physicians document the specific reasons for exception in patients' medical records for purposes of optimal patient management and audit-readiness. The ACCF/AHA and PCPI also advocate the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement. Additional details by data source are as follows: For EHR options: eSpecification: developed and is included in this submission.
Risk Adjustment	No risk adjustment or risk stratification No risk adjustment or risk stratification.
Stratification	Consistent with CMS' Measures Management System Blueprint and recent national recommendations put forth by the IOM and NQF to standardize the collection of race and ethnicity data, we encourage the results of this measure to be stratified by race, ethnicity, administrative sex, payer and primary written and spoken language, and have included these variables as recommended data elements to be collected.
Type Score	Rate/proportion better quality = higher score
Algorithm	To calculate performance rates: 1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address). 2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical. 3) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator 4) From the patients who did not meet the numerator criteria, determine if the physician has documented that the patient meets any criteria for exception when exceptions have been specified [for this measure: medical reason(s) (eg, patients who expired or patients who left against medical advice) or patient reason(s) (eg, international patients). If the patient meets any exception criteria, they should be removed from the denominator for performance calculation. --Although the exception cases are removed from the denominator population for the performance calculation, the exception rate (ie, percentage with valid exceptions) should be calculated and reported along with performance rates to track variations in care and highlight possible areas of focus for QI.

	2455 Heart Failure: Post-Discharge Appointment for Heart Failure Patients
	If the patient does not meet the numerator and a valid exception is not present, this case represents a quality failure. Calculation algorithm is included in attachment (see A.1). Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value:

	2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Percentage of patients, aged 18 years and older, for whom percutaneous coronary intervention (PCI) is performed with comprehensive documentation for the procedure that includes, at a minimum, the following elements: priority (acute coronary syndrome, urgent, elective, emergency/salvage); presence and severity of angina symptoms; use of antianginal medical therapies within two weeks prior to the procedure, if any; presence, results, and timing of non-invasive stress test, fractional flow reserve (FFR), or intravascular ultrasound (IVUS), if performed; and significance of angiographic stenosis (may be quantitative or qualitative) on coronary angiography for treated lesion.
Type	Process
Data Source	Electronic Clinical Data : Registry Data are collected via the National Cardiovascular Data Registry (NCDR®) CathPCI Registry®. CathPCI Registry data collection form is included in Appendix A.1. Available in attached appendix at A.1 No data dictionary
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	Measurement period may vary by implementation program For the CathPCI registry the following measurement periods apply: Denominator: during the 3 month (quarterly) measurement period Numerator: Once for each surgical procedure performed during the measurement period [evaluate every surgical procedure during quarter – evaluate each patient record for the required pre-operative documentation]
Numerator Statement	Patients with comprehensive documentation for the procedure that includes, at a minimum, the following elements: - Priority: acute coronary syndrome, urgent, elective, emergency/salvage - Presence and severity of angina symptoms [eg, Canadian Cardiovascular Society Classification (CCS) system] - Use of antianginal medical therapies within two weeks prior to the procedure, if any

	2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI
	- Presence, results, and timing of non-invasive stress test FFR or IVUS, if performed - Significance of angiographic stenosis (may be quantitative or qualitative) on coronary angiography for treated lesion
Numerator Details	For patients for whom more than one PCI procedure is performed, the most recent PCI procedure will be counted. See Appendix A.1 for data dictionary, data collection form and measure calculation for registry reporting specifications.
Denominator Statement	All patients aged 18 years and older for whom PCI is performed
Denominator Details	For patients for whom more than one PCI procedure is performed, the most recent PCI procedure will be counted. Denominator coding: CPT Codes: 92920 Percutaneous transluminal coronary angioplasty; single major coronary artery or branch 92924 Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch 92928 Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch 92933 Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch 92937 Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel 92941 Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel 92943 Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; single vessel SNOMED-CT Codes: 11101003 Percutaneous transluminal coronary angioplasty 15256002 Transmyocardial revascularization by laser technique 175066001 Percutaneous transluminal balloon angioplasty of bypass graft of coronary artery 232727003 Percutaneous directional coronary atherectomy 232728008 Percutaneous low speed rotational coronary atherectomy 232729000 Percutaneous high speed rotational coronary atherectomy 397193006 Percutaneous transluminal coronary angioplasty by rotoablation 397431004 Percutaneous transluminal coronary angioplasty with rotoablation, single vessel 414089002 Emergency percutaneous coronary intervention 415070008 Percutaneous coronary intervention 428488008 Placement of stent in anterior descending branch of left coronary artery 429499003 Placement of stent in circumflex branch of left coronary artery 429639007 Percutaneous transluminal balloon angioplasty with insertion of stent into coronary artery

	2411 Percutaneous Coronary Intervention (PCI): Comprehensive Documentation of Indications for PCI
	431759005 Percutaneous transluminal atherectomy using fluoroscopic guidance 75761004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty 80762004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, multiple vessels 85053006 Percutaneous transluminal coronary angioplasty, multiple vessels 91338001 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, single vessel See Appendix A.1 for data dictionary, data collection form and measure calculation for registry reporting specifications.
Exclusions	None
Exclusion details	Not applicable
Risk Adjustment	No risk adjustment or risk stratification Not applicable
Stratification	We encourage the results of this measure be stratified by race, ethnicity, administrative sex, and payer, consistent with the data elements collected by the National Cardiovascular Data Registry (NCDR®) CathPCI Registry®.
Type Score	Rate/proportion better quality = higher score
Algorithm	To calculate performance rates: 1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address). 2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical. 3) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator If the patient does not meet the numerator, this case represents a quality failure. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value:

	2450 Heart Failure: Symptom and Activity Assessment
Status	Steering Committee Review
Steward	American College of Cardiology

	2450 Heart Failure: Symptom and Activity Assessment
Description	Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented
Type	Process
Data Source	Electronic Clinical Data : Registry This measure is currently being used in the ACCF PINNACLE registry for the outpatient office setting.This registry is located at www.pinnacleregistry.org No data collection instrument provided Attachment S.2b_NQF_2450_Heart_Failure_Symptom_and_Activity_Assessment_Value_Set-635234005641496564.xls
Level	Clinician : Individual
Setting	Ambulatory Care : Clinician Office/Clinic, Home Health, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility, Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility, Ambulatory Care : Outpatient Rehabilitation
Time Window	Measurement period may vary by implementation program. For the PINNACLE registry, the measurement period is as follows: Denominator: during the 3 month (quarterly) measurement period Numerator: At each visit during the measurement period
Numerator Statement	Patient visits with quantitative results of an evaluation of both current level of activity and clinical symptoms documented
Numerator Details	Evaluation and quantitative results documented should include: • Documentation of New York Heart Association (NYHA) Class OR • Documentation of completion of a valid, reliable, disease-specific instrument (eg, Kansas City Cardiomyopathy Questionnaire, Minnesota Living with Heart Failure Questionnaire, Chronic Heart Failure Questionnaire) Definitions: The NYHA functional classification reflects a subjective assessment by a healthcare provider of the severity of a patient's symptoms. Patients are assigned to one of the following 4 classes • Class I: patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain. • Class II: patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea, or anginal pain. • Class III: patients with marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnea, or anginal pain. • Class IV: patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased. Patient-reported health status as assessed by a structured survey/questionnaire instrument offers another, more patient-centric approach to assessing and summarizing the patient's overall heart failure symptom burden. These instruments serve as important constructs for delivering and evaluating heart failure care. For EHR options: eSpecification developed and is included in this submission.
Denominator Statement	All patient visits for those patients aged 18 years and older with a diagnosis of heart failure

	2450 Heart Failure: Symptom and Activity Assessment
Denominator Details	For EHR options: eSpecification developed and is included in this submission.
Exclusions	Not applicable. No exclusions for this measure.
Exclusion details	Not applicable. No exclusions for this measure.
Risk Adjustment	No risk adjustment or risk stratification Not applicable. No risk adjustment or stratification.
Stratification	Consistent with CMS' Measures Management System Blueprint and recent national recommendations put forth by the IOM and NQF to standardize the collection of race and ethnicity data, we encourage the results of this measure to be stratified by race, ethnicity, administrative sex, payer and primary written and spoken language, and have included these variables as recommended data elements to be collected.
Type Score	Rate/proportion better quality = higher score
Algorithm	To calculate performance rates: 1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address). 2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical. 3) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator If the patient does not meet the numerator, this case represents a quality failure. Calculation algorithm is included in data dictionary/code table attachment (see A.1). Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0078 : Heart Failure (HF) : Assessment of Clinical Symptoms of Volume Overload (Excess) 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The specifications are not harmonized because this measure is intended to replace Measure 0078: Assessment of Clinical Symptoms of Volume Overload. The intention is for Measure 0078 to be retired. 5b.1 If competing, why superior or rationale for additive value: Not applicable. No competing measures.

	2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
Status	Steering Committee Review
Steward	Centers for Medicare & Medicaid Services
Description	This measure estimates hospital 30-day risk-standardized mortality rates following admission for AMI using clinical information collected at presentation in an electronic health record

	2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
	(EHR). Mortality is defined as death from any cause within 30 days of the index admission date.
Type	Outcome
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Electronic Clinical Data : Laboratory, Other The data source for the measure will be the hospital EHR for clinical data, merged with CMS Medicare claims and enrollment data (or another external source of death data) for the 30-day mortality outcome. The data source for measure development was the A No data collection instrument provided Attachment AMI_Mortality_eMeasure_Risk_model_coefficients.xlsx
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	Numerator time window: Death from any cause within 30 days from the admission date for the index AMI admission. Denominator time window: This measure was developed using hospitalizations during a 12 month time period, calendar year 2009. The time period for public reporting has not been determined.
Numerator Statement	The outcome for this measure is 30-day all-cause mortality. We define all-cause mortality as death from any cause within the 30 days after the index admission date.
Numerator Details	The measure includes death from any cause within 30 days after the date of the index admission. Because this outcome will not be available from a hospital EHR, ascertainment of mortality will occur by linking to an external data source. For example, mortality could be obtained by linking with the Medicare Enrollment Database for Medicare patients or with another source of death data, such as the National Death Index or the Death Master File.
Denominator Statement	The cohort includes inpatient admissions for patients aged 65 years and older who were discharged from short-term acute care hospitals with a principal discharge diagnosis of AMI.
Denominator Details	The cohort includes inpatient admissions for patients aged 65 years and older who were discharged from a short-term acute care hospital with a principal discharge diagnosis of AMI, as identified by the value sets in the attached measure specifications file (Section S.2a).
Exclusions	The measure excludes index admissions: 1) For patients who were discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge); 2) For patients who were transferred in from another short-term acute care institution (because the death is attributed to the hospital where the patient was initially admitted); 3) With unreliable data (age >115 years); 4) That were not randomly selected from a patient's multiple qualifying AMI admissions in a year (because AMI patients may have multiple admissions in a year and the measure includes one randomly selected AMI admission per patient per year); 5) With unknown death (missing vital status) after linking to the Medicare Enrollment Database or other source of death data.
Exclusion details	Denominator exclusions, including discharges AMA and transfers in from another acute care institution, are identified using the value sets in the attached measure specifications file (section S.2a). Index admissions with unreliable data are identified and excluded if the patient's age is greater than 115 years, based on the calculation of patient age. Patient age is calculated based on birthdate (see value set in attached file).

	2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
	Patients with unknown death (missing vital status) are identified by linking to the Medicare Enrollment Database or other source of death data.
Risk Adjustment	Statistical risk model The measure estimates the hospital 30-day all-cause risk-standardized mortality rate (RSMR) using a hierarchical logistic regression model. In brief, the approach simultaneously models outcomes at two levels (patient and hospital) to account for the varia Available in attached Excel or csv file at S.2b
Stratification	Results of this measure will not be stratified.
Type Score	Rate/proportion better quality = lower score
Algorithm	The measure score is calculated based on the following steps: 1. Patient cohort is identified based on the inclusion and exclusion criteria (see questions S.7, S.8, S.9, S.10, S.11); 2. Data elements for risk adjustment are collected using the first collected value, as detailed below; 3. Outcome is ascertained from an outside data source, such as the Medicare Enrollment Database (see questions S.4, S.5, S.6) 4. Measure score is calculated with aggregated data across all included sites, as described below. Measure calculation occurs outside of the EHR. Risk-adjustment Variables The measure is adjusted for the variables listed below; all variables are continuous: Age (years) Heart rate: HR<70 (bpm) Heart rate: HR>=70 (bpm) Systolic blood pressure (mmHg) Troponin ratio (ng/mL) Creatinine (mg/dL) Troponin ratio is derived for each patient as follows: initial troponin value/hospital-specific upper reference limit for troponin. All hospitals will provide the upper reference limit of troponin for their laboratory. To reduce the effect of spurious outliers, extreme values obtained for the risk-adjustment variables will be transformed by replacement with a value at the outer limit of a designated range by a process called Winsorization. Specifically, low and high outliers for the risk-adjustment variables will be Winsorized as follows: Age: no Winsorization Heart rate: low extreme values assigned to 40 bpm and high extreme values assigned to 140 bpm Systolic blood pressure: low extreme values assigned to 70 mmHg and high extreme values assigned to 150 mmHg Troponin ratio: no Winsorization of low values; high extreme values assigned to 60 Creatinine: low extreme values assigned to 0.6 mg/dL and high extreme values assigned to 3 mg/dL Measure Score Calculation The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the predicted hospital outcome (the numerator) is the sum of predicted probabilities of mortality for all patients at that particular hospital. The predicted probability for each patient in the hospital is

	2473 Hospital 30-Day Risk-Standardized Acute Myocardial Infarction (AMI) Mortality eMeasure
	calculated using the hospital-specific intercept (described in detail in the attached calculation algorithm) and patient risk factors. The expected hospital outcome (the denominator) is the sum of expected probabilities of mortality for all patients at a hospital. The expected probability of each patient in a hospital is calculated using a common intercept and patient risk factors. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a ratio lower than one indicates a lower-than-expected mortality rate (or better quality), and a ratio greater than one indicates a higher-than-expected mortality rate (or worse quality). Please see attachments for more details on the calculation algorithm and the value sets for the risk-adjustment variables. References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0730 : Acute Myocardial Infarction (AMI) Mortality Rate 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The measure specifications are, by design, not completely harmonized in that the current measure uses clinical data elements collected from EHR for risk adjustment, and the measures listed above use claims data for risk adjustment. Additionally, the outco 5b.1 If competing, why superior or rationale for additive value: N/A

	0521 Heart Failure Symptoms Assessed and Addressed
Status	Steering Committee Review
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure, and appropriate actions were taken when the patient exhibited symptoms of heart failure
Type	Process
Data Source	Electronic Clinical Data The measure is calculated based on data obtained from the Home Health Outcome and Assessment Information Set (OASIS-C), which is a core standard assessment data set that home health agencies integrate into their own patient-specific, comprehensive assessm Available at measure-specific web page URL identified in S.1 Attachment OASISQM_data_dictionary.xls
Level	Facility

	0521 Heart Failure Symptoms Assessed and Addressed
Setting	Home Health
Time Window	CMS systems report data on episodes that end within a rolling 12 month period, updated quarterly.
Numerator Statement	Number of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure and appropriate actions were taken when the patient exhibited symptoms of heart failure.
Numerator Details	Patient episodes in which the patient has a diagnosis of heart failure, defined as a response of anything other than NA to M1500 (Symptoms in Heart Failure Patients) OR in which there is an ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of one of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes] PLUS appropriate actions were taken in response to heart failure symptoms, defined as a response of anything other than 0 to M1510 (Heart Failure Follow-up) OR the patient had no symptoms of heart failure, defined as M1500 = 0 – No
Denominator Statement	Number of home health episodes of care ending with a discharge or transfer to inpatient facility during the reporting period for patients with a diagnosis of heart failure, other than those covered by generic or measure-specific exclusions.
Denominator Details	A start/resumption of care assessment ((M0100) Reason for Assessment = 1 (Start of cA start/resumption of care assessment ((M0100) Reason for Assessment = 1 (Start of care) or 3 (Resumption of care)) paired with a corresponding discharge/transfer assessment ((M0100) Reason for Assessment = 6 (Transfer to inpatient facility – not discharged), 7 (Transfer to inpatient facility – discharged), 8 (Death at home), or 9 (Discharge from agency)), other than those covered by denominator exclusions PLUS - the response to M1500 (Symptoms in Heart Failure Patients) is anything other than NA OR in which there is an ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of one of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes]
Exclusions	Episodes in which the patient did not have a diagnosis of heart failure and was not assessed to have symptoms of heart failure since the last OASIS assessment. Episodes ending in patient death.
Exclusion details	Denominator Exclusion Details Measure-Specific Exclusions: Number of home health patient episodes of care where at end of episode: - (M0100) Reason for Assessment = 8 (death at home) AND Patient was not assessed to have symptoms of heart failure, defined as the response to M1500 (Symptoms in Heart Failure Patients) is 0 (No) AND Patient does not have a diagnosis of heart failure, defines as no ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of any of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21

	0521 Heart Failure Symptoms Assessed and Addressed
	428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes] Generic Exclusions: Medicare-certified home health agencies are currently required to collect and submit OASIS data only for adult (aged 18 and over) non-maternity Medicare and Medicaid patients who are receiving skilled home health care. Therefore, maternity patients, patients less than 18 years of age, non-Medicare/Medicaid patients, and patients who are not receiving skilled home services are all excluded from the measure calculation. However, the OASIS items and related measures could potentially be used for other adult patients receiving services in a community setting, ideally with further testing. The publicly-reported data on CMS' Home Health Compare web site also repress cells with fewer than 20 observations, and reports for home health agencies in operation less than six months.
Risk Adjustment	No risk adjustment or risk stratification NA - process measure
Stratification	NA - not stratified
Type Score	Rate/proportion better quality = higher score

Algorithm	This measure excludes patients who do not have a diagnosis of heart failure (identified as no heart failure ICD-9 codes in M1020 or M1022 and M1500_SYMTM_HRT_FAILR_PTNTS[2] = NA), as well as any assessments that ended in death. The exclusion also applies to the corresponding measures for short term and long term episodes of care. A diagnosis of heart failure is defined as a ICD-9 value found under M1020 or M1022 of one of the following codes:
	402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9.
	Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes, which include I11.0 I13.0 I13.2 I50.9 I50.1 I50.20 I50.21 I50.22 I50.23 I50.30 I50.31 I50.32 I50.33 I50.40 I50.41 I50.42 I50.43 I50.9
	IF (M1500_SYMTM_HRT_FAILR_PTNTS[2] <>NA OR (Heart Failure DGN identified in M1020_PRI_DGN_ICD1 OR M1022_OTH_DGN1_ICD_1 through M1022_OTH_DGN5_ICD_1)
	THEN
	HAS_HEART_FAILURE=1
	ELSE
	HAS_HEART_FAILURE=0
	IF HAS_HEART_FAILURE = 1 AND M0100_ASSMT_REASON[2] <> 08
	THEN
	IF M1500_SYMTM_HR_FAILR_PTNTS[2]=0 OR M1510_HRT_FAILR_NO_ACTN[2] = 0
	THEN
	Heart_Failure_Assessed_Treated_All = 1
	ELSE
	Heart_Failure_Assessed_Treated_All = 0
	END IF No diagram provided

Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: see 5b.1

	0521 Heart Failure Symptoms Assessed and Addressed
	5b.1 If competing, why superior or rationale for additive value: There are no measures that conceptually address both the same measure focus (heart failure assessment and intervention) and the same target population (homebound patients). We found one process measure on Heart Failure Assessment 0078 Heart Failure (HF) :

	2379 Adherence to Antiplatelet Therapy after Stent Implantation
Status	Steering Committee Review
Steward	Centers for Medicare & Medicaid Services
Description	Average proportion of days covered (PDC) for individuals with antiplatelet therapy during the 12 months following implantation of a coronary artery drug-eluting stent (DES) or a bare-metal stent (BMS).
Type	Process
Data Source	Administrative claims For measure calculation, the following Medicare files were required: • Denominator tables • Prescription drug benefit (Part D) coverage tables • Beneficiary file • Institutional claims (Part A) • Non-institutional claims (Part B)—physician carrier/non-D No data collection instrument provided Attachment NQF2379_-_Codes_Table.xls
Level	Clinician : Group/Practice, Health Plan, Integrated Delivery System, Population : State
Setting	Ambulatory Care : Clinician Office/Clinic
Time Window	The measure requires 24 consecutive months of data. Numerator time window: The time period is defined as the 12 consecutive months following earliest implantation of the coronary artery drug-eluting stent or the bare-metal stent, or until death date if the individual died within the 12 months following earliest implantation of the coronary artery stent.
Numerator Statement	The sum of the days covered by the days' supply of all antiplatelet prescriptions during the days measured in the denominator
Numerator Details	Numerator The sum of the days covered by the days' supply of all antiplatelet prescriptions during the days measured in the denominator For prescriptions with a days' supply that extends beyond the end of the measurement period, count only the days for which the drug was available to the individual during the measurement period. If there are prescriptions for the same drug (generic name) on the same date of service, keep the prescription with the largest days' supply. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended. The following are the antiplatelet medications (P2Y12 receptor inhibitors). The route of administration includes all oral formulations of the medications listed below. Table 1. P2Y12 Receptor Inhibitors clopidogrel prasugrel

	2379 Adherence to Antiplatelet Therapy after Stent Implantation
	ticagrelor Note: Obsolete drug products are excluded from NDCs with an inactive date more than three years prior to the beginning of the measurement period or look-back period, if applicable.
Denominator Statement	The sum of the days measured for all individuals who undergo a coronary artery drug-eluting stent (DES) or bare-metal stent (BMS) placement at any time during the first 12 months of the 24-month measurement period and have at least two prescriptions for a
Denominator Details	Index Event: Placement of coronary artery drug-eluting stent or bare-metal stent identified using a procedure code within the hospital inpatient or hospital outpatient claims data during the first 12 months of the 24 month measurement period (shown below). Days Measured: 365 days following placement of the stent or the number of days between stent placement and individual's death. Table 2. Codes Used to Identify Coronary Artery Stent Placement Acute Inpatient Setting ICD-9-CM: 36.07, 36.06 ICD-10-CM: 0270046, 027004Z, 0270346, 027034Z, 0270446, 027044Z, 0271046, 027104Z, 0271346, 027134Z, 0271446, 027144Z, 0272046, 027204Z, 0272346, 027234Z, 0272446, 027244Z, 0273046, 027304Z, 0273346, 027334Z, 0273446, 027344Z Hospital Outpatient Department Setting ICD-9-CM: 36.07, 36.06 ICD-10-CM: 0270046, 027004Z, 0270346, 027034Z, 0270446, 027044Z, 0271046, 027104Z, 0271346, 027134Z, 0271446, 027144Z, 0272046, 027204Z, 0272346, 027234Z, 0272446, 027244Z, 0273046, 027304Z, 0273346, 027334Z, 0273446, 027344Z Other Outpatient Setting HCPCS: C1874, C1875, G0290, G0291
Exclusions	Individuals with a history of contraindication(s) to antiplatelet therapy are excluded. Contraindications include peptic ulcer disease, intracranial hemorrhage, and gastrointestinal (GI) bleed.
Exclusion details	Contraindications are identified by any diagnosis listed below any time during the measurement period (24 months). Table 3. Codes Indicating a Contraindication to P2Y12 Receptor Inhibitor Therapy Peptic Ulcer Disease ICD-9-CM: V12.71, 531.xx, 532.xx, 533.xx ICD-10-CM: K25.0, K25.1, K25.2, K25.3, K25.4, K25.5, K25.6, K25.7, K25.9, K26.0, K26.1, K26.2, K26.3, K26.4, K26.5, K26.6, K26.7, K26.9, K27.0, K27.1, K27.2, K27.3, K27.4, K27.5, K27.6, K27.7, K27.9, Z87.11 Intracranial Hemorrhage ICD-9-CM: 094.87, 430, 431, 432.x, 800.1x, 800.2x, 800.3x, 800.6x, 800.7x, 800.8x, 801.1x,801.2x, 801.3x, 801.6x, 801.7x, 801.8x, 803.1x, 803.2x, 803.3x, 803.6x, 803.7x, 803.8x, 804.1x,804.2x, 804.3x, 804.6x, 804.7x, 804.8x, 851.xx, 852.xx, 853.xx, 854.1x, 997.02 ICD-10-CM: A52.19, G97.31, G97.32, I60.00, I60.01, I60.02, I60.10, I60.11, I60.12, I60.20, I60.21, I60.22, I60.30, I60.31, I60.32, I60.4, I60.50, I60.51, I60.52, I60.6, I60.7, I60.8, I60.9, I61.0, I61.1, I61.2, I61.3, I61.4, I61.5, I61.6, I61.8, I61.9, I62.00, I62.01, I62.02, I62.03, I62.1, I62.9, I97.810, I97.811, I97.820, I97.821, S01.90XA, S02.0XXA, S02.0XXB, S02.10XA, S02.10XB, S02.91XA, S02.91XB, S06.310A, S06.311A, S06.312A, S06.313A, S06.314A, S06.315A, S06.316A, S06.317A, S06.318A, S06.319A, S06.320A, S06.321A, S06.322A, S06.323A, S06.324A, S06.325A, S06.326A, S06.327A, S06.328A, S06.329A, S06.330A, S06.331A, S06.332A, S06.333A, S06.334A, S06.335A, S06.336A, S06.337A, S06.338A, S06.339A, S06.340A, S06.341A, S06.342A, S06.343A,

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	S06.344A, S06.345A, S06.346A, S06.347A, S06.348A, S06.349A, S06.350A, S06.351A, S06.352A, S06.353A, S06.354A, S06.355A, S06.356A, S06.357A, S06.358A, S06.359A, S06.360A, S06.361A, S06.362A, S06.363A, S06.364A, S06.365A, S06.366A, S06.367A, S06.368A, S06.369A, S06.370A, S06.371A, S06.372A, S06.373A, S06.374A, S06.375A, S06.376A, S06.377A, S06.378A, S06.379A, S06.380A, S06.381A, S06.382A, S06.383A, S06.384A, S06.385A, S06.386A, S06.387A, S06.388A, S06.389A, S06.4X0A, S06.4X1A, S06.4X2A, S06.4X3A, S06.4X4A, S06.4X5A, S06.4X6A, S06.4X7A, S06.4X8A, S06.4X9A, S06.5X0A, S06.5X1A, S06.5X2A, S06.5X3A, S06.5X4A, S06.5X5A, S06.5X6A, S06.5X7A, S06.5X8A, S06.5X9A, S06.6X0A, S06.6X1A, S06.6X2A, S06.6X3A, S06.6X4A, S06.6X5A, S06.6X6A, S06.6X7A, S06.6X8A, S06.6X9A, S06.890A, S06.891A, S06.892A, S06.893A, S06.894A, S06.895A, S06.896A, S06.897A, S06.898A, S06.899A Gastrointestinal Tract Hemorrhage ICD-9-CM: 456.0, 456.20, 530.7, 530.82, 534.xx, 537.83, 537.84, 562.02, 562.03, 562.12, 562.13, 569.3, 569.85, 569.86, 578.x ICD-10-CM: I85.01, I85.11, K22.6, K22.8, K28.0, K28.1, K28.2, K28.3, K28.4, K28.5, K28.6, K28.7, K28.9, K31.811, K31.82, K55.21, K57.01, K57.11, K57.13, K57.21, K57.31, K57.33, K57.41, K57.51, K57.53, K57.81, K57.91, K57.93, K62.5, K63.81, K92.0, K92.1, K92.2
Risk Adjustment	No risk adjustment or risk stratification Not applicable
Stratification	Depending on the operational use of the measure, measure results may be stratified by: • State • Accountable Care Organizations (ACOs)* • Plan • Physician Group • Age - Divided into 6 categories: 18-24, 25-44, 45-64, 65-74, 75-84, and 85+ years • Race/Ethnicity • Dual Eligibility *ACO attribution methodology is based on where the beneficiary is receiving the plurality of his/her primary care services and subsequently assigned to the participating providers.
Type Score	Rate/proportion better quality = higher score
Algorithm	To calculate this measure, Medicare administrative claims data and related files, as described in detail in Section S.24, will be required. Denominator: The sum of the days measured for all individuals who undergo a coronary artery drug-eluting stent (DES) or bare-metal stent (BMS) placement at any time during the first 12 months of the 24-month measurement period and have at least two prescriptions for antiplatelet therapy during the 12 months following stent placement: 1. Include individuals who are 18 or older as of the beginning of the measurement period. 2. Include eligible individuals who were continuously enrolled in Part D coverage during the measurement year and the previous year, meaning those individuals with no more than a one-month gap in enrollment during the measurement year and no more than a one-month gap in enrollment during the previous year. 3. Include Fee-For-Service individuals only, meaning those who had no more than a one-month gap in Part A enrollment, no more than a 1-month gap in Part B enrollment, and no more than one month of HMO enrollment during both the current measurement year and the previous measurement year. If Yes, create an eligible individuals dataset. If No, exclude from the measure population. 4. Pull all Part A claims with a procedure code indicating a coronary artery DES or BMS

	2379 Adherence to Antiplatelet Therapy after Stent Implantation
	implantation that occurred during the first 12 months of the 24-month measurement period. 5. If the DES or BMS procedure is identified by only a HCPCS code, then use the discharge date as the procedure date. 6. If there are multiple DES or BMS procedures for an individual, keep the claim with the earliest procedure date. Identify the date of the earliest stent implantation procedure as the index date. 7. Merge with the eligibility file from Step 3 to keep only those eligible individuals with a coronary artery stent implantation during the first 12 months of the 24-month measurement period. 8. Pull all Part A and Part B claims for the 24-month period that indicated a contraindication to P2Y12 receptor inhibitor therapy. Use all diagnosis codes for identifying contraindications to pull the data. 9. Exclude individuals with a contraindication to P2Y12 receptor inhibitor therapy (Step 8 dataset) from the eligible individuals with a coronary artery stent implantation during the first 12 months of the 24-month measurement period (Step 7 dataset). 10. Pull all Part D claims for the 24-month period for P2Y12 receptor inhibitors and attach the drug ID and the generic name to the dataset. 11. Retain eligible beneficiaries with at least two claims for P2Y12 receptor inhibitors within the one-year period after index stent implantation date. 12. For each individual calculate the measurable days as the number of days from the index date (original DES or BMS) to one year following the index date (365 days) or up until death, if death occurred within one year from the index date. 13. Sum the days measured for all eligible individuals. Numerator: The sum of the days covered by the days' supply of all antiplatelet therapy prescriptions during the days measured in the denominator 1. For each individual in the denominator, calculate the days covered by P2Y12 receptor inhibitors during the year (365 days) following the index date or until death, without adjusting for hospitalization: a. Use the dataset from Step 12 of the denominator logic, sort and de-duplicate claims by beneficiary ID, service date, generic name, and descending days' supply. If prescriptions for the same drug (generic name) are dispensed on the same date of service for an individual, keep the dispensing with the largest days' supply. b. Calculate the number of days covered by P2Y12 receptor inhibitor therapy per individual. i. For prescriptions with a days' supply that extends beyond the end of the measurement period, count only the days for which the drug was available to the individual during the measurement period. ii. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended. iii. If prescriptions for different drugs (different generic names) overlap, do not adjust the prescription start date. 2. The measure numerator is the sum of the days covered for all eligible individuals. An example of SAS code for Step 5 was adapted from PQA and is also available at the URL: http://www2.sas.com/proceedings/forum2007/043-2007.pdf. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0541 : Proportion of Days Covered (PDC): 3 Rates by Therapeutic Category

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	0542 : Adherence to Chronic Medications 0001 : Asthma assessment 0545 : Adherence to Statins for Individuals with Diabetes Mellitus 0569 : ADHERENCE TO STATINS 1879 : Adherence to An 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: Differences between Proposed Measure and NQF 0541, 0542, 0543, 0545, 1879, and 1880 - Measure of Adherence: The proposed measure is expressed as a continuous adherence measure using the PDC method. The other six adherence measures are expressed as a dicho 5b.1 If competing, why superior or rationale for additive value: Not applicable

	0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Risk adjusted rate of mortality for all patients age 18 and over undergoing PCI.
Type	Outcome
Data Source	Electronic Clinical Data : Registry National Cardiovascular Data Registry Percutaneous Coronary Interventions Available at measure-specific web page URL identified in S.1 Attachment CathPCI_v4_CodersDictionary_4.4.pdf
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	One year
Numerator Statement	Patients 18 years of age and older with a PCI procedure performed during admission who expired
Numerator Details	PCI=yes Coding instructions : indicate if the patient had a percutaneous coronary intervention (PCI) Selections: yes/no Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpose of mechanical coronary revascularization. Source: NCDR Discharge status=deceased Selections: Alive/deceased Coding instructions : Indicate whether the patient was alive or deceased at discharge.
Denominator Statement	Patients 18 years of age and older with a PCI procedure performed during admission
Denominator	PCI=yes

	0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
Details	Coding instructions : indicate if the patient had a percutaneous coronary intervention (PCI) Selections: yes/no Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpos e of mechanical coronary revascularization. Source: NCDR Age: patients must be 18 years of age to be included in the registry.
Exclusions	1. NCDR Registry patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admission); 2. Patient admissions with PCI who transferred to another facility on discharge
Exclusion details	All data submissions must pass the data quality and completeness reports to be included. Note: If one or two variables are missing, the value is imputed for certain characteristics . In our data quality program, all key variables in the risk model have a high "inclusion" criteria. This means that, when a hospital submits data to us , they need to have a high level of completeness (around 95-99%) for those variables. If they are not able to meet the criteria in our data quality program, they do not receive risk adjusted mortality for the records they submitted for that quarter.
Risk Adjustment	Statistical risk model Risk adjustment methodology is a logistic regression analysis. Weights were assigned to risk factors or variables reflecting the strength of their association to PCI in-hospital mortality. Each patient in a facilities submission is given a risk score to
Stratification	N/A
Type Score	Rate/proportion better quality = lower score
Algorithm	1. Remove hospitals who fail data quality and completeness reports as outlined in the NCDR Data Quality Program (further discussed in the Testing Supplement) 2. Count of admissions from data submissions that pass NCDR data inclusion thresholds. 3. Remove patient's subsequent PCIs during the same admission (if the patient had more than one PCI procedure during that admission). 4. Remove admissions without PCI during admission 5. Remove patient admissions with PCI who transferred to another facility on discharge; 6. Calculate measure using weight system based on predictive variables as outlined in the accompanying testing documents and supplemental materials. No diagram provided
Copyright / Disclaimer	5.1 Identified measures: 0119 : Risk-Adjusted Operative Mortality for CABG 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0535 : 30-day all-cause risk-standardized m 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: Measure 119 offers a risk adjusted measure for mortality as does our Risk Adjusted Mortality measure. The patient population is similar in that both these measures evaluate the mortality for patients requiring coronary artery revascularization. The measur 5b.1 If competing, why superior or rationale for additive value: The measures listed above are not competing for two reasons. The STS measure evaluates patients who are treated surgically

	0133 In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI
	and does so at a 30 day end point. The measures stewarded by CMS evaluate the PCI patient population, yet they do so at a 30 day en

	0286 Aspirin at Arrival
Status	Steering Committee Review
Steward	Centers for Medicare & Medicaid Services
Description	Percentage of emergency department acute myocardial infarction (AMI) patients or chest pain patients (with Probable Cardiac Chest Pain) without aspirin contraindications who received aspirin within 24 hours before ED arrival or prior to transfer.
Type	Process
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records Data collection occurs through vendors or via the CART tool which can be dowloaded free of charge at http://qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=12054420570 Available at measure-specific web page URL identified in S.1 Attachment Appendix_A_codes-635161869653119253.xlsx
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility
Time Window	Facilities are required to report this data quarterly.
Numerator Statement	Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer
Numerator Details	Data Element Name: Aspirin Received Collected For: OP-4 Definition: Aspirin received within 24 hours before emergency department arrival or administered prior to transfer. Aspirin reduces the tendency of blood to clot by blocking the action of a type of blood cell involved in clotting. Aspirin improves the chances of surviving a heart attack and reduces the risk of recurrence in patients who have experienced a heart attack. Suggested Data Collection Question: Was aspirin received within 24 hours before emergency department arrival or administered prior to transfer? Allowable Values: Y (Yes) Aspirin was received within 24 hours before emergency department arrival or administered prior to transfer. N (No) Aspirin was not received within 24 hours before emergency department arrival or administered prior to transfer or unable to determine from medical record documentation. Notes for Abstraction: • In the absence of explicit documentation that the patient received aspirin within 24 hours prior to Arrival Time: o In cases where the patient was received as a transfer from another hospital (inpatient, outpatient, ED, observation): ? Aspirin listed as “home” medication: Do not make inferences. Additional documentation is needed which clearly suggests the patient took aspirin at home within 24 hours prior to Arrival Time.

	0286 Aspirin at Arrival
	? Aspirin listed as "current" medication: - If there is documentation that aspirin was a current medication at the transferring facility (e.g., aspirin noted on transfer summary, aspirin noted as "current medication" in your facility's H&P), then infer aspirin was taken within 24 hours prior to Arrival Time, unless documentation suggests otherwise. - If documentation suggests "current" aspirin refers to home regimen or documentation is not clear whether "current" means patient was on aspirin at the transferring facility or at home, do not make inferences. Additional documentation is needed which clearly suggests the patient either took aspirin at home or at the transferring facility within 24 hours prior to Arrival Time. o In non-transfer cases: - Aspirin listed as "current" or "home" medication should be inferred as taken within 24 hours prior to Arrival Time, unless documentation suggests otherwise (e.g., Documentation that aspirin is on hold prior to arrival for a scheduled procedure). ? If ASA is listed as home medication and last dose is noted as the day prior to arrival but no time, then infer aspirin was taken within 24 hours. o When aspirin is noted only as received prior to arrival, without information about the exact time it was received (e.g. "baby ASA x4" per the "Treatment Prior to Arrival" section of the Triage Assessment), infer that the patient took it within 24 hours prior to Arrival Time, unless documentation suggests otherwise. o Aspirin documented as a PRN current/home medication does not count unless documentation is clear it was taken within 24 hours prior to Arrival Time. Suggested Data Sources: • Ambulance record • Emergency Department record Inclusion Guidelines for Abstraction: Refer to Appendix C, OP Table 1.1, Aspirin and Aspirin-Containing Medications. Exclusion Guidelines for Abstraction: Aggrenox (aspirin/dipyridamole)
Denominator Statement	Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) without aspirin contraindications Included Populations: • An E/M Code for emergency department encounter as defined in Appendix A, Table 1.0, and • Patients discharged/tra
Denominator Details	Patients with: • An E/M Code for emergency department encounter as defined in Appendix A, Table 1.0, and • Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and • An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a with Probable Cardiac Chest Pain (See below) Data Elements: • Birthdate • Discharge Code • E/M Code • ICD-9-CM Other Diagnosis Codes • ICD-9-CM Principal Diagnosis Code

	0286 Aspirin at Arrival
	• Outpatient Encounter Date • Probable Cardiac Chest Pain • Reason for No Aspirin on Arrival ICD-9-CM Principal Diagnosis codes, Appendix A, OP Table 1.1, Acute Myocardial Infarction (AMI): 410.00: Anterolateral wall, acute myocardial infarction-episode of care unspecified 410.01: Anterolateral wall, acute myocardial infarction-initial episode 410.10: Other anterior wall, acute myocardial infarction-episode of care unspecified 410.11: Other anterior wall, acute myocardial infarction-initial episode 410.20: Inferolateral wall, acute myocardial infarction-episode of care unspecified 410.21: Inferolateral wall, acute myocardial infarction-initial episode 410.30: Inferoposterior wall, acute myocardial infarction-episode of care unspecified 410.31: Inferoposterior wall, acute myocardial infarction-initial episode 410.40: Other inferior wall, acute myocardial infarction-episode of care unspecified 410.41: Other inferior wall, acute myocardial infarction-initial episode 410.50: Other lateral wall, acute myocardial infarction-episode of care unspecified 410.51: Other lateral wall, acute myocardial infarction-initial episode 410.60: True posterior wall, acute myocardial infarction-episode of care unspecified 410.61: True posterior wall, acute myocardial infarction-initial episode 410.70: Subendocardial, acute myocardial infarction-episode of care unspecified 410.71: Subendocardial, acute myocardial infarction-initial episode 410.80: Other specified sites, acute myocardial infarction-episode of care unspecified 410.81: Other specified sites, acute myocardial infarction-initial episode 410.90: Unspecified site, acute myocardial infarction-episode of care unspecified 410.91: Unspecified site, acute myocardial infarction-initial episode ICD-9-CM Principal Diagnosis codes for Chest Pain, Angina, Acute Coronary Syndrome Codes, Appendix A, OP Table 1.1a: 411.1 INTERMED CORONARY SYND 411.89 AC ISCHEMIC HRT DIS NEC 413.0 ANGINA DECUBITUS 413.1 PRINZMETAL ANGINA 413.9 ANGINA PECTORIS NEC/NOS 786.51 PRECORDIAL PAIN 786.52 PAINFUL RESPIRATION 786.59 CHEST PAIN NEC
Exclusions	Excluded Populations: • Patients less than 18 years of age • Patients with a documented Reason for No Aspirin on Arrival
Exclusion details	Specifications available at http://qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=1196289981244 The data element Reason for No Aspirin at Arrival: Collected For: OP-4 Definition: Reasons for not administering aspirin on arrival: • Aspirin allergy

	0286 Aspirin at Arrival
	• One or more of the medications listed in Inclusion List as pre-arrival medication • Other reasons documented by a physician/advanced practice nurse/physician assistant (physician/APN/PA) or pharmacist Aspirin reduces the tendency of blood to clot by blocking the action of a type of blood cell involved in clotting. Aspirin improves chances of surviving a heart attack and reduces the risk of occurrence in patients who have experienced a heart attack. Suggested Data Collection Question: Select one of the following documented reasons for not administering aspirin on arrival. Format: Length: 1 Type: Alphanumeric Occurs: 1 Allowable Values: 1 Allergy/Sensitivity to aspirin: There is documentation of an aspirin allergy/sensitivity. 2 Documentation of one or more of the medications listed in Inclusion List prescribed pre-arrival: One or more of the medications listed in the Inclusion List is prescribed as a pre-arrival home medication. 3 Other documented reasons: There is documentation of a reason for not administering aspirin on arrival. 4 No documented reason or Unable to determine (UTD): There is no documentation of a reason for not administering aspirin on arrival or unable to determine from medical record documentation. Notes for Abstraction: • When conflicting information is documented in a medical record, a positive finding (aspirin allergy) should take precedence over a negative finding (no known allergy). • Aspirin “allergy” or “sensitivity” documented anytime during the hospital stay counts as an allergy regardless of what type of reaction might be noted (e.g., “Allergies: ASA – Upsets stomach” – select value “1”). • Notation of an aspirin allergy prior to arrival counts as a reason for not administering aspirin, select value “1.” • Documentation of an allergy/sensitivity to one particular type of aspirin is acceptable to take as an allergy to the entire class of aspirin-containing medications (e.g., “Allergic to Empirin”). • Other reasons include any physician/APN/PA or pharmacist documentation of a reason for not administering aspirin. (e.g., ASA not administered because patient has a gastric ulcer). o There must be a documented reason. Documentation of “Aspirin not administered” will not be sufficient. Physician/APN/PA or pharmacist crossing out of an aspirin order counts as an "other reason" for not administering aspirin. • Pre-arrival hold or discontinuation of aspirin or notation such as "No aspirin" counts as a reason for not administering aspirin. • Pre-arrival "other reason" counts as reason for not administering aspirin (e.g., "Intolerance to aspirin" or "Hx GI bleeding with aspirin"). • In situations where there is documentation that would support more than one of the allowable values, 1-4, select the lowest value. Example: Patient has a documented aspirin allergy and documentation of Coumadin as a pre-arrival medication, select value “1.” • Consider a medication listed in the Inclusion List to be a pre-arrival medication (a reason for not prescribing aspirin on arrival) if there is documentation the patient was on it prior to arrival, regardless of setting. Include cases where there is indication the medication was on temporary hold

	0286 Aspirin at Arrival
	or the patient has been non-compliant/self-discontinued their medication (e.g., refusal, side effects, cost). Suggested Data Sources: • Emergency Department record Inclusion Guidelines for Abstraction: Inclusion List: Pre-arrival medications that count as an automatic reason for no aspirin • Apixaban • Coumadin • Dabigatran • Eliquis • Jantoven • Pradaxa • Rivaroxaban • Warfarin • Warfarin Sodium • Xarelto Refer to Appendix C, OP Table 1.1, Aspirin and Aspirin-Containing Medications. Exclusion Guidelines for Abstraction: None
Risk Adjustment	No risk adjustment or risk stratification None
Stratification	
Type Score	Rate/proportion better quality = higher score
Algorithm	Numerator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain) who received aspirin within 24 hours before ED arrival or prior to transfer. Denominator: Emergency Department AMI or Chest Pain patients (with Probable Cardiac Chest Pain). 1. Start. Run cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and passed the edit defined in the Data Processing Flow through this measure. Proceed to ICD-10-CM Principal Diagnosis Code. 2. Check ICD-10-CM Principal Diagnosis Code. a. If the ICD-10-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain. b. If the ICD-10-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to Aspirin Received. 3. Check Probable Cardiac Chest Pain. a. If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b. If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. c. If Probable Cardiac Chest Pain equals YES, the case will proceed to Aspirin Received.

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	4. Check Aspirin Received. a. If Aspirin Received is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b. If Aspirin Received equals NO, the case will proceed to Reason for No Aspirin on Arrival. c. If Aspirin Received equals YES, the case will proceed to a Measure Category Assignment of E. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. 5. Check Reason for No Aspirin on Arrival. a. If Reason for No Aspirin on Arrival is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b. If Reason for No Aspirin on Arrival equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. 6. If Reason for No Aspirin on Arrival equals 4, the case will proceed to a Measure Category Assignment of D. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. Available at measure-specific web page URL identified in S.1
Copyright / Disclaimer	5.1 Identified measures: 0092 : Emergency Medicine: Aspirin at Arrival for Acute Myocardial Infarction (AMI) 0132 : Aspirin at arrival for acute myocardial infarction (AMI) 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: 0092 is specified for EHRs and at the physician level, not facility level. 5b.1 If competing, why superior or rationale for additive value: Measure is applicable to the Outpatient setting. Based on separate payment initiatives, the inpatient measure and the PQRS measure is not considered competing.

	0289 Median Time to ECG
Status	Steering Committee Review
Steward	Centers for Medicare & Medicaid Services
Description	Median time from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain).
Type	Efficiency
Data Source	Administrative claims, Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records Data collection occurs through vendors or via the CART tool which can be dowloaded free of charge at http://qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier2&cid=12054420570 Available at measure-specific web page URL identified in S.1 Attachment Appendix_A_codes-

	0289 Median Time to ECG
	635125067852198235-635161869680263775.xlsx
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility
Time Window	Facilities are required to report this data quarterly.
Numerator Statement	Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain) Included Populations: • ICD-9-CM Principal or Other Diagnosis Code for AMI as defined in Appendix A1, OP Table 6.1 or an ICD-9-CM Principal or Other Diagnosis Code for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A1, OP Table 6.1a, and • E/M Code for emergency department encounter as defined in Appendix A1, OP Table 1.0a, and • Patients receiving an ECG as defined in the Appendix A1, and • Patients discharged/transferred to a short term general hospital for inpatient care, to a Federal healthcare facility, or to a Critical Access Hospital. Excluded Populations: Patients less than 18 years of age
Numerator Details	Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for AMI or Chest Pain patients (with Probable Cardiac Chest Pain). Included Populations: • An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and • Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and • An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a, and • Patients receiving an ECG Excluded Populations: • Patients less than 18 years of age Data Elements: •Arrival Time •Birthdate •Discharge Code •E/M Code •ECG •ECG Date •ECG Time •ICD-9-CM Other Diagnosis Codes •ICD-9-CM Principal Diagnosis Code •Outpatient Encounter Date •Probable Cardiac Chest Pain
Denominator	Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for AMI or Chest Pain patients (with Probable Cardiac Chest

	0289 Median Time to ECG
Statement	Pain). Included Populations: •An E/M Code for emergency departme
Denominator Details	Patients with: • An E/M Code for emergency department encounter as defined in Appendix A, OP Table 1.0, and • Patients discharged/transferred to a short term general hospital for inpatient care, or to a Federal healthcare facility, and • An ICD-9-CM Principal Diagnosis Code for AMI as defined in Appendix A, OP Table 1.1 or an ICD-9-CM Principal or Other Diagnosis Codes for Angina, Acute Coronary Syndrome, or Chest Pain as defined in Appendix A, OP Table 1.1a, and • Patients receiving an ECG as defined in the Data Dictionary
Exclusions	• Patients LESS THAN 18 years of age
Exclusion details	The calculation of >= 18 years of age on Outpatient Encounter Date is determined by: Outpatient Encounter Date - Birthdate
Risk Adjustment	No risk adjustment or risk stratification None
Stratification	None
Type Score	Continuous variable better quality = lower score
Algorithm	Algorithm Narrative for OP-5: ED Median Time to ECG Continuous Variable Statement: Time (in minutes) from emergency department arrival to ECG (performed in the ED prior to transfer) for acute myocardial infarction (AMI) or Chest Pain patients (with Probable Cardiac Chest Pain). 1. Start. Run all cases that are included in the AMI and Chest Pain Hospital Outpatient Population Algorithms and pass the edits defined in the Data Processing Flow through this measure. Proceed to ICD-9-CM Principal Diagnosis Code. 2.Check ICD-9-CM Principal Diagnosis Code. a.If the ICD-9-CM Principal Diagnosis Code is not on Appendix A, OP Table 1.1, the case will proceed to Probable Cardiac Chest Pain. b.If the ICD-9-CM Principal Diagnosis Code is on Appendix A, OP Table 1.1, the case will proceed to ECG. 3.Check Probable Cardiac Chest Pain. a.If Probable Cardiac Chest Pain is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If Probable Cardiac Chest Pain equals NO, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. c.If Probable Cardiac Chest Pain equals YES, the case will proceed to ECG. 4.Check ECG. a.If ECG is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If ECG equals NO, the case will proceed to a Measure Category Assignment of B. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. c.If ECG equals YES, the case will proceed to ECG Date.

	0289 Median Time to ECG
	5.Check ECG Date. a.If ECG Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If ECG Date equals UTD, the case will proceed to a Measure Category Assignment of Y. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. c.If ECG Date equals Non-UTD Value, the case will proceed to ECG Time. 6.Check ECG Time. a.If ECG Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If ECG Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. c.IF ECG Time equals Non-UTD Value, the case will proceed to Arrival Time. 7.Check Arrival Time. a.If Arrival Time equals UTD, the case will proceed to a Measure Category Assignment of Y. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If Arrival Time equals Non-UTD Value, the case will proceed to Measurement Value. 8.Calculate the Measurement Value. Time in minutes is equal to the ECG Date and ECG Time (in minutes) minus the Outpatient Encounter Date and Arrival Time (in minutes). 9.Check Measurement Value. a.If Measurement Value is less than 0 minutes, the case will proceed to a Measure Category Assignment of X and will be rejected. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. b.If Measurement Value is greater than or equal to 0 minutes, the case will proceed to a Measure Category Assignment of D. Return to Transmission Data Processing Flow: Clinical in the Data Transmission Section. Available at measure-specific web page URL identified in S.1
Copyright / Disclaimer	5.1 Identified measures: 0287 : Median Time to Fibrinolysis 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: 0289 is the median time from ED arrival to ECG, 0287 is the median time from emergency department arrival to administration of fibrinolytic therapy in AMI patients with ST-segment elevation on the ECG performed closest to arrival. The same population is 5b.1 If competing, why superior or rationale for additive value: These are not considered competing measures, as the measure focus (process) is different.

	0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Percentage of patients evaluated in an outpatient setting who in the previous 12 months have experienced an acute myocardial infarction or chronic stable angina or who have undergone coronary artery bypass (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac

	0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting
	valve surgery (CVS), or cardiac transplantation, who have not already participated in an early outpatient cardiac rehabilitation/secondary prevention program for the qualifying event, and who are referred to an outpatient cardiac rehabilitation/secondary prevention program.
Type	Process
Data Source	Electronic Clinical Data, Electronic Clinical Data : Electronic Health Record, Paper Medical Records, Electronic Clinical Data : Registry American College of Cardiology PINNACLE registry and AACVPR/ACC/AHA Cardiac Rehabilitation Testing (CR3) Project. No data collection instrument provided Attachment 0643_NQF_Submissions_Outpatient_Data_Dictionary.pdf
Level	Clinician : Group/Practice, Clinician : Individual, Integrated Delivery System, Clinician : Team
Setting	Ambulatory Care : Clinician Office/Clinic
Time Window	12 months following a qualifying cardiovascular event
Numerator Statement	Number of patients in an outpatient clinical practice who have had a qualifying event/diagnosis during the previous 12 months, who have been referred to an outpatient Cardiac Rehabilitation/Secondary Prevention (CR/SP) program. (Note: The program may include a traditional CR/SP program based on face-to-face interactions and training sessions or may include other options such as home-based approaches. If alternative CR/SP approaches are used, they should be designed to meet appropriate safety standards and deliver effective, evidence-based services.)
Numerator Details	All information required to collect/calculate the numerator, including all codes, logic, and definitions): Qualifying events include all patients who within the past 12 months experienced myocardial infarction (MI), coronary artery bypass graft surgery (CABG), percutaneous coronary intervention (PCI), cardiac valve surgery, heart transplantation, and/or who have a current diagnosis of chronic stable angina. A referral is defined as an official communication between the healthcare provider and the patient to recommend and carry out a referral order to an outpatient CR program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an outpatient CR program. This also includes a written or electronic communication between the healthcare provider or healthcare system and the cardiac rehabilitation program that includes the patient's enrollment information for the program. A hospital discharge summary or office note may potentially be formatted to include the necessary patient information to communicate to the CR program (e.g., the patient's cardiovascular history, testing, and treatments). According to standards of practice for cardiac rehabilitation programs, care coordination communications are sent to the referring provider, including any issues regarding treatment changes, adverse treatment responses, or new nonemergency condition (new symptoms, patient care questions, etc.) that need attention by the referring provider. These communications also include a progress report once the patient has completed the program. All communications must maintain an appropriate level of confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act (HIPAA).
Denominator Statement	Number of patients in an outpatient clinical practice who have had a qualifying cardiovascular event in the previous 12 months and who do not meet any of the criteria listed in the denominator exclusion section below, and who have not participated in an o
Denominator Details	N/A
Exclusions	Exceptions criteria require documentation of one or more of the following factors that may prohibit cardiac rehabilitation participation: Patient factors (e.g., patient resides in a long-term nursing care facility). Medical factors (e.g., patient deemed by provider to have a medically

	0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting
	unstable, life-threatening condition). Health care system factors (e.g., no cardiac rehabilitation/secondary prevention (CR/SP) program available within 60 min of travel time from the patient's home). The only exclusion criterion for this measure is noted below: Patients already referred to CR from another provider/facility and/or was participating in CR prior to encounter with provider at the current office/facility.(1) 1- When the provider discusses CR/SP referral with the patient, if the patient indicates that he/she has already been referred to CR/SP, then that provider would not be expected to make another referral. However, the provider should document that information in the medical record.
Exclusion details	Exceptions: All eligible patients who can participate in even a low intensity exercise program and who have the cognitive ability to carry out the individualized education and counseling to life-long secondary prevention efforts should be referred to cardiac rehabilitation/secondary prevention programs, because morbidity and mortality benefits extend to nearly all patient populations, regardless of age or co-morbidities. As a result, the exception examples included in the performance measure relate to either the patient's inability to attend an exercise program (due to physical or practical obstacles) or to cognitive deficits which make them unable to actively participate in exercise or to apply secondary prevention recommendations. Examples, justification, and data collection issues for exceptions for this measure; 1. Patient factors (e.g., patient resides in nursing care facility for long-term care): Patients who reside in a nursing care facility would be expected to receive exercise appropriate to their functional level from that facility, do not need education about compliance with diet or preventive medications, as those are provided by the facility, and are likely to have cognitive deficits that would preclude their own care maintenance related to CR/SP issues. Discharge destination to a nursing care facility is documented in a medical record, included in clinical notes, discharge summaries, discharge orders/instructions, and from demographic information. Note that patients who are discharged to a short-term stay in an inpatient medical rehabilitation facility are expected to be referred to CR/SP and that the referral should be reinforced by the care team at the medical rehabilitation facility. 2. Medical factors (e.g., patient deemed by provider to have a medically unstable, life-threatening condition): Medically unstable, life-threatening conditions are contraindications to aerobic exercise and require medical efforts to stabilize and reverse those conditions, rather than efforts directed at secondary prevention of cardiovascular disease. Objective criteria for contraindications to exercise training are included in AHA, ACC, and AACVPR statements and guidelines, which are readily available to practicing clinicians and abstractors. After the condition has been stabilized or reversed, then referral to CR/SP is appropriate. Providers document the specific reason for this exception in clinical notes, summaries and problem lists, which can be abstracted. 3. Health care system factors (e.g., no cardiac rehabilitation program available within 60 minutes of travel time from the patient's home): Although some patients may do so, it is not practical to expect a patient to drive for 2 hours 2 or 3 times per week in order to attend a program that lasts for 1 to 2 hours and research has shown that distance to CR/SP is inversely correlated with attendance We chose 60 minutes (assuming average 30 mph driving speed) based on published data showing that the adjusted odds ratio (OR) to attend CR/SP decreased as the distance from patient zip code to nearest CR/SP facility increased, with the greatest decline between 10.2 (6.5-14.9) miles (OR 0.58) to 31.8 (15.0-231.0) miles (OR 0.29). Although alternative delivery models such as those using telemedicine or home care may be developed in future to provide CR/SP, currently there is no reimbursement for these programs. Therefore, it is unreasonable to hold the provider responsible to refer a patient to a program that he/she is highly unlikely to attend. Providers can determine availability of CR/SP programs from on-line or local resources and document this exception in the medical record.

	0643 Cardiac Rehabilitation Patient Referral From an Outpatient Setting
	Abstractors can verify the exceptions by cross-referencing the patient's address with publicly available lists of CR/SP program locations.
Risk Adjustment	No risk adjustment or risk stratification N/A
Stratification	Measure was not stratified. Since all patient sub-groups are reported to have low referral rates and low utilization rates for cardiac rehabilitation services, there is no specific requirement to report data on this performance measure in a stratified format. However, medical centers are encouraged to utilize any stratification of their data as they use the performance measure to identify suboptimal processes and also subgroups at particular risk that are under their care. Such stratification could include stratification by gender, ethnicity, and/or age, since these variables have been found to identify subpopulations that are at particular risk for non-referral to CR/SP in some cities and regions.
Type Score	Rate/proportion better quality = higher score
Algorithm	ACC PINNACLE Registry Calculation: Practice ID present= YES AND Provider NPI= YES AND Age at start of measurement period is 18 years or older= YES AND Encounter Date is in the reporting date= YES AND Qualifying Event: Myocardial Infarction (within 12 months) =YES OR Qualifying Event: Coronary Artery Bypass Graft (Within 12 months) = YES OR Qualifying Event: Cardiac Valve Surgery (Within 12 months)= YES OR Qualifying Event: Heart Transplantation =YES OR Qualifying Event: Stable Angina (within 12 months) AND Current Diagnosis= YES OR Qualifying Event: PCI-stent (within 12 months)= YES OR Qualifying Event: PCI- other (non-stent) intervention= YES AND Yes, Patient already participating in rehab= NO AND Cardiac Rehab Referral or Plan for qualifying event/diagnosis in the past 12 months= YES And Referral Plan Documented= YES AACVPR/ACC/AHA Cardiac Rehabilitation Referral Reliability Testing (CR3): Hospital ID present = YES AND Subject ID = YES AND *Provider NPI = YES AND Age at start of measurement period is 18 years or older = YES AND Qualifying Event: Myocardial Infarction = YES OR Qualifying Event: Coronary Artery Bypass Graft = YES OR Qualifying Event: Cardiac Valve Surgery = YES OR Qualifying Event: Heart Transplantation = YES OR Qualifying Event: Stable Angina = YES OR Qualifying Event: PCI-stent = YES OR Qualifying Event: PCI- other intervention = YES AND Yes, documentation that patient was referred to CR for this event/diagnosis *Since the data for the CR3 Project were processed through the NCDR-PINNACLE Center, NPI was used to help process the data in accordance with the software used at the Center, which requires an NPI on each report. However, since the purpose of the CR3 Project was to assess reliability of the chart abstraction process and not to assess the variability of CR/SP referral by providers, we opted to analyze the CR/SP referral rates by site, and to use the site NPI for data processing purposes only. Available at measure-specific web page URL identified in S.1
Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: N/A

	0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
Status	Steering Committee Review
Steward	American College of Cardiology
Description	This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older without STEMI and without cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients.
Type	Outcome
Data Source	Administrative claims, Other, Electronic Clinical Data : Registry Data sources: NCDR CatchPCI Registry Vital Status Source: National Death Index, Death Masterfile, Medicare enrollment database, or equivalent Available at measure-specific web page URL identified in S.1 Attachment PCI_Mortality_NO_STEMI_Final.xlsx
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility
Time Window	The time window can be specified from one or more years of data. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year and validated using a data from a second year.
Numerator Statement	The outcome for this measure is all–cause death within 30 days following a PCI procedure in patients without STEMI and without cardiogenic shock at the time of the procedure.
Numerator Details	Deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI). For the purpose of development and reassessment of the measure, we used a Medicare FFS population age 65 and over. We linked CathPCI registry with corresponding Medicare data and identified: a) in-hospital deaths using the discharge disposition indicator in the Standard Analytic File (SAF) and identified) post-discharge deaths using the Enrollment Database (EDB).
Denominator Statement	The target population for this measure includes inpatient and outpatient hospital stays with a PCI procedure for patients at least 18 years of age, without STEMI and without cardiogenic shock at the time of procedure, including outpatient and observation
Denominator Details	The time window can be specified from one or more years. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year. The measure cohort is patients undergoing PCI who do not have STEMI and do not have cardiogenic shock. STEMI or cardiogenic shock is defined as present in Version 4.4 of the CathPCI registry as follows: Admissions with PCI are identified by field 5305 (PCI=yes); STEMI or shock is identified by: (1) Symptoms present on admission = ACS:STEMI (field 5000 = 6) with Time Period Symptom Onset to Admission within 24 hours (field 5005 = 5006, 5007, 5008) or Acute PCI = Yes (field 7035); OR (2) Cardiogenic shock = Yes (field 5060=1)

	0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
Exclusions	Hospital stays are excluded from the cohort if they meet any of the following criteria: (1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer). This exclusion is applied in order to avoid assigning the death to two separate admissions. (2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI); (3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures. (4) PCIs for patients with more than 10 days between date of admission and date of PCI. Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.
Exclusion details	Excluded hospital stays are identified as follows: (1) PCIs that follow a prior PCI in the same admission or occur during a transfer-in admission (PCI to PCI). For the purposes of development we used Medicare data to define transfers as two admissions that occur within 1 day of each other and identified patients in this cohort who had a PCI during both admissions. This can also be identified in the registry data. (2) Patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI). The specific data fields will depend on the data source used. (3) Not the first hospital stay with a PCI in the 30 days prior to a patient death. These stays are identified by procedure date in the CathPCI Registry and death date in the vital status data source. (4) PCIs for patients with more than 10 days between date of admission and date of PCI. We determine length of stay by subtracting the admission date from the procedure date in the CathPCI Registry.
Risk Adjustment	Statistical risk model The measure estimates the 30-day all-cause risk-standardized mortality rate (RSMR) using a hierarchical logistic regression model. In brief, the approach simultaneously models outcomes at two levels (patient and hospital) to account for the variance in pa Available in attached Excel or csv file at S.2b
Stratification	Results of this measure will not be stratified.
Type Score	Rate/proportion better quality = lower score
Algorithm	The measure score is calculated based on the following steps: 1. Patient cohort is identified based on the inclusion and exclusion criteria (see questions S.7, S.8, S.9, S.10, S.11); 2. Data elements for risk adjustment are collected using the first collected value, as detailed below; 3. Outcome is ascertained from an outside data source, such as the Medicare Enrollment Database (see questions S.4, S.5, S.6) 4. Measure score is calculated with aggregated data across all included sites, as described below. Risk-adjustment variables The measure is adjusted for the variables listed below:

	0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
	1. Age (10 year increments) 2. Body Mass Index (5 kg/m^2 increments) 3. History of cerebrovascular disease 4. History of chronic lung disease 5. Glomerular Filtration Rate (GFR) (derived) 6. Previous PCI 7. Heart Failure - current status 8. Cardiogenic shock on admission 9. Symptom onset 10. Ejection Fraction percent (EF) 11. PCI status 12. Highest risk lesion – coronary artery segment category 13. Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Measure Score Calculation The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the predicted hospital outcome (the numerator) is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality (better quality) and a higher ratio indicates higher-than-expected mortality (worse quality). The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess hospital performance in any reporting period, we re-estimate the model coefficients using the years of data in that period. Please see attachments for more details on the calculation algorithm and the value sets for the risk-adjustment variables. References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0229 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart fa 5a.1 Are specs completely harmonized? Yes

	0535 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock
	5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: This measure is most similar to the 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) and with cardiogenic shock. Its additive value st

	0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Status	Steering Committee Review
Steward	American College of Cardiology
Description	This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older with STEMI or cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development, the measure cohort was derived in a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients.
Type	Outcome
Data Source	Administrative claims, Other, Electronic Clinical Data : Registry Data sources: NCDR CatchPCI Registry Vital Status Source: National Death Index, Death Masterfile, Medicare enrollment database, or equivalent Available at measure-specific web page URL identified in S.1 Attachment PCI_mortality_STEMI_Final.xlsx
Level	Facility, Population : National
Setting	Hospital/Acute Care Facility
Time Window	The time window can be specified from one or more years of data. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year and validated using a data from a second year.
Numerator Statement	The outcome for this measure is all-cause death within 30 days following a PCI procedure in patients with STEMI or cardiogenic shock at the time of the procedure.
Numerator Details	Deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI). For the purpose of development and reassessment of the measure, we used a Medicare FFS population age 65 and over. We linked CathPCI registry with corresponding Medicare data and identified: a) in-hospital deaths using the discharge disposition indicator in the Standard Analytic File (SAF) and identified) post-discharge deaths using the Enrollment Database (EDB).
Denominator	The target population for this measure includes inpatient and outpatient hospital stays with a

	0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Statement	PCI procedure for patients at least 18 years of age, with STEMI or cardiogenic shock at the time of procedure, including outpatient and observation stay patient
Denominator Details	The time window can be specified from one or more years. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year. The measure cohort is patients undergoing PCI who have STEMI or cardiogenic shock. STEMI or cardiogenic shock is defined as present in Version 4.4 of the CathPCI registry as follows: Admissions with PCI are identified by field 5305 (PCI=yes); STEMI or shock is identified by: (1) Symptoms present on admission = ACS:STEMI (field 5000 = 6) with Time Period Symptom Onset to Admission within 24 hours (field 5005 = 5006, 5007, 5008) or Acute PCI = Yes (field 7035); OR (2) Cardiogenic shock = Yes (field 5060=1)
Exclusions	Hospital stays are excluded from the cohort if they meet any of the following criteria: (1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer). This exclusion is applied in order to avoid assigning the death to two separate admissions. (2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI); (3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures. (4) PCIs for patients with more than 10 days between date of admission and date of PCI. Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.
Exclusion details	Excluded hospital stays are identified as follows: (1) PCIs that follow a prior PCI in the same admission or occur during a transfer-in admission (PCI to PCI). For the purposes of development we used Medicare data to define transfers as two admissions that occur within 1 day of each other and identified patients in this cohort who had a PCI during both admissions. This can also be identified in the registry data. (2) Patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI). The specific data fields will depend on the data source used. (3) Not the first hospital stay with a PCI in the 30 days prior to a patient death. These stays are identified by procedure date in the CathPCI Registry and death date in the vital status data source. (4) PCIs for patients with more than 10 days between date of admission and date of PCI. We determine length of stay by subtracting the admission date from the procedure date in the CathPCI Registry
Risk Adjustment	Statistical risk model The measure estimates the 30-day all-cause risk-standardized mortality rate (RSMR) using a hierarchical logistic regression model. In brief, the approach simultaneously models outcomes at two levels (patient and hospital) to account for the variance in pa Available in attached Excel or csv file at S.2b

	0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Stratification	Results of this measure will not be stratified.
Type Score	Rate/proportion better quality = lower score
Algorithm	The measure score is calculated based on the following steps: 1. Patient cohort is identified based on the inclusion and exclusion criteria (see questions S.7, S.8, S.9, S.10, S.11); 2. Data elements for risk adjustment are collected using the first collected value, as detailed below; 3. Outcome is ascertained from an outside data source, such as the Medicare Enrollment Database (see questions S.4, S.5, S.6) 4. Measure score is calculated with aggregated data across all included sites, as described below. Risk-adjustment variables The measure is adjusted for the variables listed below: 1. Age (10 year increments) 2. Body Mass Index (5 kg/m^2 increments) 3. History of cerebrovascular disease 4. History of chronic lung disease 5. Glomerular Filtration Rate (GFR) (derived) 6. Previous PCI 7. Heart Failure - current status 8. Cardiogenic shock on admission 9. Symptom onset 10. Ejection Fraction percent (EF) 11. PCI status 12. Highest risk lesion – coronary artery segment category 13. Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Measure Score Calculation The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the predicted hospital outcome (the numerator) is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality (better quality) and a higher ratio indicates higher-than-expected mortality (worse quality). The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess

	0536 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
	hospital performance in any reporting period, we re-estimate the model coefficients using the years of data in that period. Please see attachments for more details on the calculation algorithm and the value sets for the risk-adjustment variables. References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0229 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart fa 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: This measure is most similar to the 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock. Its additive va

	0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Patients undergoing PCI who receive prescriptions for all medications (aspirin, P2Y12 and statins) for which they are eligible for at discharge
Type	Composite
Data Source	Electronic Clinical Data : Registry National Cardiovascular Data Registry (NCDR®) CathPCI Registry® Available at measure-specific web page URL identified in S.1 Attachment CathPCI_v4_CodersDictionary_4.4-635230042811280622.pdf
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	1 year
Numerator Statement	Patients who receive all medications for which they are eligible. 1. Aspirin prescribed at discharge (if eligible for aspirin as described in denominator) AND 2. P2Y12 agent (clopidogrel, prasurgel, or ticlopidine) prescribed at discharge (if eligible for P2Y12 as described in denominator) AND 3. Statin prescribed at discharge (if eligible for statin as described in denominator)
Numerator	If eligible for Aspirin and given, then code “Yes”

	0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
Details	If eligible for Aspirin and not given, then code "No, not given" If eligible for P2Y12 and given, then code then "Yes" If eligible for P2Y12 and not given, then code "No, not given" If eligible for statin and given, then code "Yes" If eligible for statin and not given, then code "No, not given" If any "No, not given" present, then performance not met. Else, performance met. Note: Contraindicated and those participating in blinded studies are also considered as exceptions and performance met.
Denominator Statement	Patients surviving hospitalization who are eligible to receive any of the three medication classes: 1) Eligibile for aspirin (ASA): Patients undergoing PCI who do not have a contraindication to aspirin documented AND 2) Eligible for P2Y12 agent (clopidogrel, prasugrel, or ticlopidine): Patients undergoing PCI with stenting who do not have a contraindication to P2Y12 agent documented AND 3) Eligible for statin therapy: Patients undergoing PCI who do not have a contraindication to statin therapy.
Denominator Details	
Exclusions	Discharge status of expired; patients who left against medical advice, patients discharged to hospice or for whom comfort care measures only is documented; patients discharged to other acute hospital
Exclusion details	NCDR has a clear distinction between absolute "Exclusions" (e.g., death, transfer) and relative "Exceptions", (e.g., contraindications). While patients with exclusions are always automatically removed from the denominator and numerator, exceptions allow clinicians the opportunity to identify an intervention/process/medication as not clinically indicated based on the unique patient scenario. Each of the three medications incorporated into this composite may be coded as Yes (medication prescribed), No (medication not prescribed), Blinded (pt. involved in a clinical trial, medication type unavailable for data entry), and Contraindicated (used to capture many of the medical exceptions used in measure #2452).
Risk Adjustment	No risk adjustment or risk stratification
Stratification	N/A
Type Score	Rate/proportion better quality = higher score
Algorithm	1) Remove patients whose discharge status is expired 2) Check if given patient is eligible for 1 of the 3 medication therapies. 3) If eligible for at least 1 medication, then keep this patient. 4) If not eligible for any of the 3 medications, then patient is removed from eligibility. 5) If eligible for Aspirin and given, then code "Yes" If eligible for Aspirin and not given, then code "No, not given" If eligible for Aspirin but contraindicated, then code "contraindicated/blinded" If eligible for P2Y12 and given, then code then "Yes" If eligible for P2Y12 and not given, then code "No, not given"

	0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
	If eligible for P2Y12 but contraindicated, then code "contraindicated/blinded" If eligible for statin and given, then code "Yes" If eligible for statin and not given, then code "No, not given" If eligible for statin but contraindicated, then code "contraindicated/blinded" 6) If any "No, not given" present, then performance not met. Else, performance met.
Copyright / Disclaimer	5.1 Identified measures: 0067 : Chronic Stable Coronary Artery Disease: Antiplatelet Therapy 0068 : Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic 0074 : Chronic Stable Coronary Artery Disease: Lipid Control 0118 : Anti-Lipid Treatment Discharge 0142 : Aspirin prescribed at discharge for AMI 0543 : Adherence to Statin Therapy for Individuals with Coronary Artery Disease 0569 : ADHERENCE TO STATINS 0631 : Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy 0639 : Statin Prescribed at Discharge 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: see below for discussion of harmonization and competition. 5b.1 If competing, why superior or rationale for additive value: Statin measures 0543: Adherence to Statin Therapy for Individuals with Coronary Artery Disease is not specific to patients undergoing a PCI. This measure uses claims data and it is not evaluated at the point of discharge. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0569: Adherence to Statin is similar to measure 0543 listed above and is not specific to patients undergoing PCI. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0118: Anti-Lipid Treatment Discharge includes patients undergoing CABG, not PCI. It also includes non statins as well as statins. 0074: Chronic Stable Coronary Artery Disease: Lipid Control includes all patients with CAD and is not specific to those patients who have had a PCI. 0639: Statin Prescribed at Discharge evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. P2Y12/Aspirin component 0142: Aspirin prescribed at discharge for AMI evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is

	0964 Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients
	measured by CMS. 0067: Chronic Stable Coronary Artery Disease: Antiplatelet Therapy includes all patients with CAD and is not specific to those patients who have had a PCI. 0068: Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic includes a larger patient population of patients who were discharged for acute myocardial infarction, coronary artery bypass graft or percutaneous coronary interventions. The measure 0068 measures patients who had documentation of use of aspirin or another antithrombotic during the measurement year. The critical difference is the use of the term "or" that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. 0631 Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy The critical difference is the use of the term "or" that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class.

	2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Risk adjusted rate of intra and post procedure bleeding for all patients age 18 and over undergoing PCI .
Type	Composite
Data Source	Electronic Clinical Data : Registry National Cardiovascular Data Registry CathPCI Registry Available at measure-specific web page URL identified in S.1 Attachment CathPCI_v4_CodersDictionary_4.4-635230481331385161.pdf
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	1 year
Numerator Statement	Patients 18 years of age and older with a post-PCI bleeding event as defined below: Post-PCI bleeding defined as any ONE of the following: 1. Bleeding event w/in 72 hours ; OR 2. Hemorrhagic stroke; OR 3. Tamponade ; OR 4. Post-PCI transfusion for patients with a pre-procedure hgb >8 g/dL and pre-procedure hgb not missing; OR 5. Absolute hgb decrease from pre-PCI to post-PCI of >= 3 g/dl AND pre-procedure hgb =<16 g/dL AND pre-procedure hgb not missing.
Numerator	Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an

	2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
Details	angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpose of mechanical coronary revascularization. Source: NCDR Age: patients must be 18 years of age to be included in the registry.
Denominator Statement	Patients 18 years of age and older with a PCI procedure performed during admission
Denominator Details	Coding instructions : indicate if the patient had a percutaneous coronary intervention (PCI) Selections: yes/no Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpose of mechanical coronary revascularization. Source: NCDR Age: patients must be 18 years of age to be included in the registry.
Exclusions	1. NCDR Registry patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admis sion); 2. Patients who died on the same day of the procedure 3. Patients who had CABG during the admission 4. Patients with pre procedure hemoglobin <8 g/dL (severely anemic)
Exclusion details	All data submissions must pass the data quality and completeness reports to be included. Note: If one or two variables are missing, the value is imputed for certain characteristics . In our data quality program, all key variables in the risk model have a high "inclusion" criteria. This means that, when a hospital submits data to us , they need to have a high level of completeness (around 95-99%) for those variables. If they are not able to meet the criteria in our data quality program, they do not receive risk adjusted mortality for the records they submitted for that quarter.
Risk Adjustment	Statistical risk model Risk adjustment methodology is a logistic regression analysis. Weights were assigned to risk factors or variables reflecting the strength of their association to PCI in-hospital bleeding. Each patient in a facilities submission is given a risk score to predict risk of in hospital bleeding and accurately report risk adjusted bleeding rates during hospitalization. Data from 1,043,759 PCI procedures performed between February 2008 and April 2011 at 1,142 CathPCI Registry sites were used to develop this risk model using logistic regression. All Risk Adjustment Variables Age Gender Body Mass Index ST-segment elevation MI Thrombolytics Pre-procedure hemoglobin PCI Status Renal Failure Glomerular filtration rate Cardiac arrest/in 24 hours Cerebrovascular disease

	2459 In-hospital Risk Adjusted Rate of Bleeding Events for patients undergoing PCI
	Peripheral vascular disease Chronic lung disease Prior PCI Diabetes status Heart Failure NYHA class Ejection fraction Number of diseased vessels PCI of proximal LAD PCI of left main Pre-procedure Thrombolysis in Myocardial Infaction flow SCAI lesion classification Presence of chronic total occlusion In- stent thrombosis (previously treated within 1 month)
Stratification	N/A
Type Score	Rate/proportion better quality = lower score
Algorithm	1. Remove hospitals who fail data quality and completeness reports as outlined in the NCDR Data Quality Program (further discussed in the Testing Supplement) 2. Remove hospitals who have do not have at least one patient with a pre-PCI or post-PCI hemoglobin value. 3. Remove patient's subsequent PCIs during the same admission (if the patient had more than one PCI procedure during that admission). 4. Remove patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admission) 5. Remove patients who died on the same day of the procedure 6. Remove patients who had CABG during the admission 7. Remove patients with pre procedure hemoglobin <8 g/dL patients (severely anemic) 8. Calculate measure used weight system based on predictive variables as outlined in the accompanying testing documents and supplemental materials. No diagram provided
Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: 5b.1 If competing, why superior or rationale for additive value: There are no bleeding related risk adjusted measures endorsed by NQF currently for the PCI patient population.

	2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
Status	Steering Committee Review
Steward	American College of Cardiology
Description	Percentage of patients aged 18 years and older for whom PCI is performed who are prescribed optimal medical therapy at discharge

	2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
Type	Composite
Data Source	Electronic Clinical Data : Registry NCDR® CathPCI Registry® v4.4 Diagnostic Catheterization Data Collection Form Available in attached appendix at A.1 No data dictionary
Level	Clinician : Individual
Setting	Hospital/Acute Care Facility
Time Window	For Perioperative Measures: Once for each surgical procedure performed during the measurement period
Numerator Statement	Patients who are prescribed* all of the medications, for which they are eligible, at discharge *Prescribed may include prescription given to the patient for medications at discharge OR patient already taking medications as documented in current medication list
Numerator Details	Electronic Specifications for registry reporting are included in the Appendix, attached to Section A.1 in the 'Additional' tab.
Denominator Statement	All patients aged 18 years and older for whom PCI is performed who are eligible for any of the following medications (ie, patient has no contraindication, allergy, intolerance): • Aspirin • P2Y12 inhibitor (only for PCIs with stenting) • Statin
Denominator Details	The denominator population is identified as patients who have a PCI performed (procedure codes included below) and who are eligible for at least one discharge medication. Eligibility for medications and electronic specifications for registry reporting are included in the Appendix, attached to Section A.1 in the 'Additional' tab. CPT Codes: 92920 Percutaneous transluminal coronary angioplasty; single major coronary artery or branch 92924 Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch 92928 Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch 92933 Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch 92937 Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel 92941 Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel 92943 Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; single vessel SNOMED-CT Codes: 11101003 Percutaneous transluminal coronary angioplasty 15256002 Transmyocardial revascularization by laser technique

	2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	175066001 Percutaneous transluminal balloon angioplasty of bypass graft of coronary artery 232727003 Percutaneous directional coronary atherectomy 232728008 Percutaneous low speed rotational coronary atherectomy 232729000 Percutaneous high speed rotational coronary atherectomy 397193006 Percutaneous transluminal coronary angioplasty by rotoablation 397431004 Percutaneous transluminal coronary angioplasty with rotoablation, single vessel 414089002 Emergency percutaneous coronary intervention 415070008 Percutaneous coronary intervention 428488008 Placement of stent in anterior descending branch of left coronary artery 429499003 Placement of stent in circumflex branch of left coronary artery 429639007 Percutaneous transluminal balloon angioplasty with insertion of stent into coronary artery 431759005 Percutaneous transluminal atherectomy using fluoroscopic guidance 75761004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty 80762004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, multiple vessels 85053006 Percutaneous transluminal coronary angioplasty, multiple vessels 91338001 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, single vessel
Exclusions	Patients who expired Patients who left against medical advice Patient discharged to hospice or for whom comfort care measures only is documented Patient discharged to other acute care hospital
Exclusion details	According to the ACCF/AHA/PCPI methodology, exclusions arise when the intervention required by the numerator is not appropriate for a group of patients who are otherwise included in the initial patient or eligible population of a measure (ie, the denominator). Exclusions are absolute and are to be removed from the denominator of a measure and therefore clinical judgment does not enter the decision. For this measure, exclusions include patients who died, etc. etc. Exclusions, including applicable value sets, are included in the measure specifications. Additional details by data source are as follows: The electronic specifications for registry reporting necessary to capture the excluded population are included in the Appendix, attached to Section A.1 in the 'Additional' tab.
Risk Adjustment	No risk adjustment or risk stratification Not applicable.
Stratification	We encourage the results of this measure be stratified by race, ethnicity, administrative sex, and payer.
Type Score	Rate/proportion better quality = higher score
Algorithm	To calculate performance rates: 1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address). 2) From the patients within the initial patient population criteria, find the patients who

	2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	qualify for the denominator. (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical. 3) Find the patients who quality for exclusions and subtract from the denominator. 4) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator If the patient does not meet the numerator, this case represents a quality failure. Available in attached appendix at A.1
Copyright / Disclaimer	5.1 Identified measures: 0543 : Adherence to Statin Therapy for Individuals with Coronary Artery Disease 0569 : ADHERENCE TO STATINS 0118 : Anti-Lipid Treatment Discharge 0074 : Chronic Stable Coronary Artery Disease: Lipid Control 0639 : Statin Prescribed at Discharge 0142 : Aspirin prescribed at discharge for AMI 0067 : Chronic Stable Coronary Artery Disease: Antiplatelet Therapy 0068 : Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic 0631 : Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: Statin measures 0543: Adherence to Statin Therapy for Individuals with Coronary Artery Disease is not specific to patients undergoing a PCI. This measure uses claims data and it is not evaluated at the point of discharge. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0569: Adherence to Statin is similar to measure 0543 listed above and is not specific to patients undergoing PCI. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0118: Anti-Lipid Treatment Discharge includes patients undergoing CABG, not PCI. It also includes non statins as well as statins. 0074: Chronic Stable Coronary Artery Disease: Lipid Control includes all patients with CAD and is not specific to those patients who have had a PCI. 0639: Statin Prescribed at Discharge evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. P2Y12/Aspirin component 0142: Aspirin prescribed at discharge for AMI evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. 0067: Chronic Stable Coronary Artery Disease: Antiplatelet Therapy includes all patients with CAD and is not specific to those patients who have had a PCI. 0068: Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic

	2452 Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	includes a larger patient population of patients who were discharged for acute myocardial infarction, coronary artery bypass graft or percutaneous coronary interventions. The measure 0068 measures patients who had documentation of use of aspirin or another antithrombotic during the measurement year. The critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. 0631 Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet TherapyThe critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. ACCF/AHA: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients The specifications for the measure are harmonized. Though this measure targets the same topic area, encouraging the use of aspirin, P2Y12 inhibitor, and statin at discharge following PCI, the ACCF/AHA measure is measured on the facility level, whereas the measure we are submitting for endorsement here is a physician level measure. 5b.1 If competing, why superior or rationale for additive value:

	2377 Defect Free Care for AMI
Status	Steering Committee Review
Steward	American College of Cardiology
Description	The proportion of acute MI patients >= 18 years of age that receive "perfect care" based upon their eligibility for each performance measures
Type	Composite
Data Source	Electronic Clinical Data : Registry The data source is the ACTION Registry- GWTG of the National Cardiovascular Data Registry of the American College of Cardiology. Available in attached appendix at A.1 Attachment ACTION_v2_CodersDictionary_2.3.pdf
Level	Facility
Setting	Hospital/Acute Care Facility
Time Window	Data is aggregated on a yearly basis for this measure.
Numerator Statement	The number of perfect care opportunities met from all eligible acute MI patients
Numerator Details	See attached excel spreadsheet All eligible care opportunities must be met in order for the composite measure to be achieved. There are 11 potential opportunities for the STEMI population and 8 potential opportunities for the NSTEMI population
Denominator Statement	All acute MI patients further broken down into STEMI and NSTEMI
Denominator	

	2377 Defect Free Care for AMI
Details	
Exclusions	The population is all patients equal to or over the age of 18 that have an acute MI. The population is further divided into two populations,those that have a STEMI and those that have an NSTEMI. STEMI 41 StemiNoted = 1 AND AGE >= 18 NSTEMI 42 StemiNoted = 0 AND PosMarkers = 1 AND AGE >= 18
Exclusion details	There are no denominator exclusions.
Risk Adjustment	No risk adjustment or risk stratification There is no risk adjustment for this measure.
Stratification	There is no stratification.
Type Score	

Algorithm	For each individual measure if the denominator is met (patient eligible for care) and the numerator is met (the appropriate care is received) then increase the denominator opportunity and numerator care received each by 1. If the denominator is met but the care received is NOT met then only increase the denominator (eligibility). This logic is followed for 11 individual measures for STEMI and 8 individual measures for NSTEMI. Then if the care opportunities are equal to the number of times care is received then the numerator of the composite measure is increased by one. If the numerator and denominator are not equal the numerator is not increased.
	DefectFreeCareCounter = 0
	PMCareOpportunity = 0
	PMTherapy = 0
	CASE Population ID = 41
	IF(ASAArrivalPMInd denominator = 1 AND ASAArrivalPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ASAArrivalPMInd denominator = 1 AND ASAArrivalPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(ASADischargePMInd denominator = 1 AND ASADischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ASADischargePMInd denominator = 1 AND ASADischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(BBDischargePMInd denominator = 1 AND BBDischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(BBDischargePMInd denominator = 1 AND BBDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(StatinDischargePMInd denominator = 1 AND StatinDischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(StatinDischargePMInd denominator = 1 AND StatinDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(EvalLVSysFuncPMInd denominator = 1 AND EvalLVSysFuncPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(EvalLVSysFuncPMInd denominator = 1 AND EvalLVSysFuncPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(ACEARBDischargePMInd denominator = 1 AND ACEARBDischargePMInd numerator = 1)

	2377 Defect Free Care for AMI

	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ACEARBDischargePMInd denominator = 1 AND ACEARBDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(D2NPMElapsedTime denominator = 1 AND D2NPMLessThan30Ind numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(D2NPMElapsedTime denominator = 1 AND D2NPMLessThan30Ind numerator = 0)
	increment PMCareOpportunity by 1
	IF(D2BPMElapsedTime denominator = 1 AND D2BPMLessThan90Ind numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(D2BPMElapsedTime denominator = 1 AND D2BPMLessThan90Ind numerator = 0)
	increment PMCareOpportunity by 1
	IF(ReperfusionPMInd denominator = 1 AND ReperfusionPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ReperfusionPMInd denominator = 1 AND ReperfusionPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(SmokePMInd denominator = 1 AND SmokePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(SmokePMInd denominator = 1 AND SmokePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(CardRehabPMInd denominator = 1AND CardRehabPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(CardRehabPMInd denominator = 1AND CardRehabPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF PMCareOpportunity = PMTherapy THEN
	increment DefectFreeCareCounter by 1
	)
	CASE Population ID = 42
	IF(ASAArrivalPMInd denominator = 1 AND ASAArrivalPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ASAArrivalPMInd denominator = 1 AND ASAArrivalPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(ASAArrivalPMInd denominator = 1 AND ASADischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ASAArrivalPMInd denominator = 1 AND ASADischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(BBDischargePMInd denominator = 1 AND BBDischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(BBDischargePMInd denominator = 1 AND BBDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(StatinDischargePMInd denominator = 1 AND StatinDischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(StatinDischargePMInd denominator = 1 AND StatinDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(EvalLVSysFuncPMInd denominator = 1 AND EvalLVSysFuncPMInd numerator = 1)

	2377 Defect Free Care for AMI

	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(EvalLVSysFuncPMInd denominator = 1 AND EvalLVSysFuncPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(ACEARBDischargePMInd denominator = 1 AND ACEARBDischargePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(ACEARBDischargePMInd denominator = 1 AND ACEARBDischargePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(SmokePMInd denominator = 1 AND SmokePMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(SmokePMInd denominator = 1 AND SmokePMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF(CardRehabPMInd denominator = 1AND CardRehabPMInd numerator = 1)
	increment PMCareOpportunity by 1, increment PMTherapy by 1
	IF(CardRehabPMInd denominator = 1AND CardRehabPMInd numerator = 0)
	increment PMCareOpportunity by 1
	IF PMCareOpportunity = PMTherapy THEN
	increment DefectFreeCareCounter by 1 No diagram provided

Copyright / Disclaimer	5.1 Identified measures: 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: The ACC/AHA Task Force on Performance Measures were very careful to align their measures with the preiously NQF endorsed AMI measures from CMS. 5b.1 If competing, why superior or rationale for additive value: While the composite meausre has no competing measure, there are competing measures at the individual level. However the compositie measure is superior because it encompasses the entire specturm of care for MI patients.

Appendix G: Related and Competing Measures

Comparison of NQF #0964 and NQF #2452

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
Steward	American College of Cardiology	American College of Cardiology
Description	Patients undergoing PCI who receive prescriptions for all medications (aspirin, P2Y12 and statins) for which they are eligible for at discharge	Percentage of patients aged 18 years and older for whom PCI is performed who are prescribed optimal medical therapy at discharge
Type	Composite	Composite
Data Source	Electronic Clinical Data : Registry National Cardiovascular Data Registry (NCDR®) CathPCI Registry® Available at measure-specific web page URL identified in S.1 Attachment CathPCI_v4_CodersDictionary_4.4-635230042811280622.pdf	Electronic Clinical Data : Registry NCDR® CathPCI Registry® v4.4 Diagnostic Catheterization Data Collection Form Available in attached appendix at A.1 No data dictionary
Level	Facility	Clinician : Individual
Setting	Hospital/Acute Care Facility	Hospital/Acute Care Facility
Numerator Statement	Patients who receive all medications for which they are eligible. 1. Aspirin prescribed at discharge (if eligible for aspirin as described in denominator) AND 2. P2Y12 agent (clopidogrel, prasurgel, or ticlopidine) prescribed at discharge (if eligible for P2Y12 as described in denominator) AND 3. Statin prescribed at discharge (if eligible for statin as described in denominator)	Patients who are prescribed* all of the medications, for which they are eligible, at discharge *Prescribed may include prescription given to the patient for medications at discharge OR patient already taking medications as documented in current medication list
Numerator Details	If eligible for Aspirin and given, then code “Yes” If eligible for Aspirin and not given, then code “No, not given” If eligible for P2Y12 and given, then code then “Yes” If eligible for P2Y12 and not given, then code “No, not given” If eligible for statin and given, then code “Yes”	Electronic Specifications for registry reporting are included in the Appendix, attached to Section A.1 in the ‘Additional’ tab.

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	If eligible for statin and not given, then code "No, not given" If any "No, not given" present, then performance not met. Else, performance met. Note: Contraindicated and those participating in blinded studies are also considered as exceptions and performance met.	
Denominator Statement	Patients surviving hospitalization who are eligible to receive any of the three medication classes: 1) Eligibile for aspirin (ASA): Patients undergoing PCI who do not have a contraindication to aspirin documented AND 2) Eligible for P2Y12 agent (clopidogrel, prasugrel, or ticlopidine): Patients undergoing PCI with stenting who do not have a contraindication to P2Y12 agent documented AND 3) Eligible for statin therapy: Patients undergoing PCI who do not have a contraindication to statin therapy.	All patients aged 18 years and older for whom PCI is performed who are eligible for any of the following medications (ie, patient has no contraindication, allergy, intolerance): • Aspirin • P2Y12 inhibitor (only for PCIs with stenting) • Statin
Denominator Details		The denominator population is identified as patients who have a PCI performed (procedure codes included below) and who are eligible for at least one discharge medication. Eligibility for medications and electronic specifications for registry reporting are included in the Appendix, attached to Section A.1 in the 'Additional' tab. CPT Codes: 92920 Percutaneous transluminal coronary angioplasty; single major coronary artery or branch 92924 Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch 92928 Percutaneous transcatheter placement of intracoronary stent(s), with coronary angioplasty when performed; single major coronary artery or branch 92933 Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
		92937 Percutaneous transluminal revascularization of or through coronary artery bypass graft (internal mammary, free arterial, venous), any combination of intracoronary stent, atherectomy and angioplasty, including distal protection when performed; single vessel 92941 Percutaneous transluminal revascularization of acute total/subtotal occlusion during acute myocardial infarction, coronary artery or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty, including aspiration thrombectomy when performed, single vessel 92943 Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; single vessel SNOMED-CT Codes: 11101003 Percutaneous transluminal coronary angioplasty 15256002 Transmyocardial revascularization by laser technique 175066001 Percutaneous transluminal balloon angioplasty of bypass graft of coronary artery 232727003 Percutaneous directional coronary atherectomy 232728008 Percutaneous low speed rotational coronary atherectomy 232729000 Percutaneous high speed rotational coronary atherectomy 397193006 Percutaneous transluminal coronary angioplasty by rotoablation 397431004 Percutaneous transluminal coronary angioplasty with rotoablation, single vessel 414089002 Emergency percutaneous coronary intervention 415070008 Percutaneous coronary intervention 428488008 Placement of stent in anterior descending branch of left coronary artery 429499003 Placement of stent in circumflex branch of left

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
		coronary artery 429639007 Percutaneous transluminal balloon angioplasty with insertion of stent into coronary artery 431759005 Percutaneous transluminal atherectomy using fluoroscopic guidance 75761004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty 80762004 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, multiple vessels 85053006 Percutaneous transluminal coronary angioplasty, multiple vessels 91338001 Infusion of intra-arterial thrombolytic agent with percutaneous transluminal coronary angioplasty, single vessel
Exclusions	Discharge status of expired; patients who left against medical advice, patients discharged to hospice or for whom comfort care measures only is documented; patients discharged to other acute hospital	Patients who expired Patients who left against medical advice Patient discharged to hospice or for whom comfort care measures only is documented Patient discharged to other acute care hospital
Exclusion Details	NCDR has a clear distinction between absolute "Exclusions" (e.g., death, transfer) and relative "Exceptions", (e.g., contraindications). While patients with exclusions are always automatically removed from the denominator and numerator, exceptions allow clinicians the opportunity to identify an intervention/process/medication as not clinically indicated based on the unique patient scenario. Each of the three medications incorporated into this composite may be coded as Yes (medication prescribed), No (medication not prescribed), Blinded (pt. involved in a clinical trial, medication type unavailable for data entry), and Contraindicated (used to capture many of the medical exceptions used in measure #2452).	According to the ACCF/AHA/PCPI methodology, exclusions arise when the intervention required by the numerator is not appropriate for a group of patients who are otherwise included in the initial patient or eligible population of a measure (ie, the denominator). Exclusions are absolute and are to be removed from the denominator of a measure and therefore clinical judgment does not enter the decision. For this measure, exclusions include patients who died, etc. etc. Exclusions, including applicable value sets, are included in the measure specifications. Additional details by data source are as follows: The electronic specifications for registry reporting necessary to capture the excluded population are included in the Appendix, attached to Section A.1 in the 'Additional' tab.
Risk Adjustment	No risk adjustment or risk stratification	No risk adjustment or risk stratification Not applicable.

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
Stratification	N/A	We encourage the results of this measure be stratified by race, ethnicity, administrative sex, and payer.
Type Score	Rate/proportion better quality = higher score	Rate/proportion better quality = higher score
Algorithm	1) Remove patients whose discharge status is expired 2) Check if given patient is eligible for 1 of the 3 medication therapies. 3) If eligible for at least 1 medication, then keep this patient. 4) If not eligible for any of the 3 medications, then patient is removed from eligibility. 5) If eligible for Aspirin and given, then code "Yes" If eligible for Aspirin and not given, then code "No, not given" If eligible for Aspirin but contraindicated, then code "contraindicated/blinded" If eligible for P2Y12 and given, then code then "Yes" If eligible for P2Y12 and not given, then code "No, not given" If eligible for P2Y12 but contraindicated, then code "contraindicated/blinded" If eligible for statin and given, then code "Yes" If eligible for statin and not given, then code "No, not given" If eligible for statin but contraindicated, then code "contraindicated/blinded" 6) If any "No, not given" present, then performance not met. Else, performance met.	To calculate performance rates: 1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address). 2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator. (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical. 3) Find the patients who quality for exclusions and subtract from the denominator. 4) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator If the patient does not meet the numerator, this case represents a quality failure. Available in attached appendix at A.1
Submission items	5.1 Identified measures: 0067 : Chronic Stable Coronary Artery Disease: Antiplatelet Therapy 0068 : Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic 0074 : Chronic Stable Coronary Artery Disease: Lipid Control 0118 : Anti-Lipid Treatment Discharge 0142 : Aspirin prescribed at discharge for AMI 0543 : Adherence to Statin Therapy for Individuals with Coronary	5.1 Identified measures: 0543 : Adherence to Statin Therapy for Individuals with Coronary Artery Disease 0569 : ADHERENCE TO STATINS 0118 : Anti-Lipid Treatment Discharge 0074 : Chronic Stable Coronary Artery Disease: Lipid Control 0639 : Statin Prescribed at Discharge 0142 : Aspirin prescribed at discharge for AMI 0067 : Chronic Stable Coronary Artery Disease: Antiplatelet Therapy

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	Artery Disease 0569 : ADHERENCE TO STATINS 0631 : Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy 0639 : Statin Prescribed at Discharge 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: see below for discussion of harmonization and competition. 5b.1 If competing, why superior or rationale for additive value: Statin measures 0543: Adherence to Statin Therapy for Individuals with Coronary Artery Disease is not specific to patients undergoing a PCI. This measure uses claims data and it is not evaluated at the point of discharge. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0569: Adherence to Statin is similar to measure 0543 listed above and is not specific to patients undergoing PCI. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0118: Anti-Lipid Treatment Discharge includes patients undergoing CABG, not PCI. It also includes non statins as well as statins. 0074: Chronic Stable Coronary Artery Disease: Lipid Control includes all patients with CAD and is not specific to those patients who have had a PCI. 0639: Statin Prescribed at Discharge evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended	0068 : Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic 0631 : Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: Statin measures 0543: Adherence to Statin Therapy for Individuals with Coronary Artery Disease is not specific to patients undergoing a PCI. This measure uses claims data and it is not evaluated at the point of discharge. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0569: Adherence to Statin is similar to measure 0543 listed above and is not specific to patients undergoing PCI. This is a measure using claims data and determines whether patients are filing their prescription. The measure we propose evaluates if the prescription has been provided to the patients. 0118: Anti-Lipid Treatment Discharge includes patients undergoing CABG, not PCI. It also includes non statins as well as statins. 0074: Chronic Stable Coronary Artery Disease: Lipid Control includes all patients with CAD and is not specific to those patients who have had a PCI. 0639: Statin Prescribed at Discharge evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. P2Y12/Aspirin component 0142: Aspirin prescribed at discharge for AMI evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication.

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. P2Y12/Aspirin component 0142: Aspirin prescribed at discharge for AMI evaluates patients who have had a myocardial infarction. There may be patient overlap with this measure and the one proposed. The composite measure proposed in this application however contains two other guideline recommended medication. Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. 0067: Chronic Stable Coronary Artery Disease: Antiplatelet Therapy includes all patients with CAD and is not specific to those patients who have had a PCI. 0068: Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic includes a larger patient population of patients who were discharged for acute myocardial infarction, coronary artery bypass graft or percutaneous coronary interventions. The measure 0068 measures patients who had documentation of use of aspirin or another antithrombotic during the measurement year. The critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. 0631 Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet Therapy The critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure	Our measure includes all PCI patients not only those who have had a MI, thus ours is monitoring secondary prevention as well as the tertiary prevention that is measured by CMS. 0067: Chronic Stable Coronary Artery Disease: Antiplatelet Therapy includes all patients with CAD and is not specific to those patients who have had a PCI. 0068: Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic includes a larger patient population of patients who were discharged for acute myocardial infarction, coronary artery bypass graft or percutaneous coronary interventions. The measure 0068 measures patients who had documentation of use of aspirin or another antithrombotic during the measurement year. The critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. 0631 Secondary Prevention of Cardiovascular Events - Use of Aspirin or Antiplatelet TherapyThe critical difference is the use of the term “or” that allows patients to be included into the numerator of this measure. Evidence indicates that Dual Antiplatelet Therapy is the ideal medical therapy of choice for this patient population. The composite measure proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class. ACCF/AHA: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients The specifications for the measure are harmonized. Though this measure targets the same topic area, encouraging the use of aspirin, P2Y12 inhibitor, and statin at discharge following PCI, the ACCF/AHA measure is measured on the facility level, whereas the measure we are submitting for endorsement here is a physician level measure. 5b.1 If competing, why superior or rationale for additive value:

	0964: Therapy with aspirin, P2Y12 inhibitor, and statin at discharge following PCI in eligible patients	2452: Percutaneous Coronary Intervention (PCI): Post-procedural Optimal Medical Therapy
	proposed in this application follows the current medical guidelines for treating patients undergoing PCI with both Aspirin and a specifically anti platelets medications within the P2Y12 inhibitor drug class.	

Comparison of NQF #0133, NQF# 0535, and NQF #0536

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Steward	American College of Cardiology	American College of Cardiology	American College of Cardiology
Description	Risk adjusted rate of mortality for all patients age 18 and over undergoing PCI.	This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older without STEMI and without cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients.	This measure estimates hospital risk-standardized 30-day all-cause mortality rate following percutaneous coronary intervention (PCI) among patients who are 18 years of age or older with STEMI or cardiogenic shock at the time of procedure. The measure uses clinical data available in the National Cardiovascular Data Registry (NCDR) CathPCI Registry for risk adjustment. For the purpose of development, the measure cohort was derived in a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. For the purpose of development and testing, the measure used a Medicare fee-for-service (FFS) population of patients 65 years of age or older with a PCI. However, the measure is designed to be used in the broader population of PCI patients.

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
Type	Outcome	Outcome	Outcome
Data Source	Electronic Clinical Data : Registry National Cardiovascular Data Registry Percutaneous Coronary Interventions Available at measure-specific web page URL identified in S.1 Attachment CathPCI_v4_CodersDictionary_4.4.pdf	Administrative claims, Other, Electronic Clinical Data : Registry Data sources: NCDR CatchPCI Registry Vital Status Source: National Death Index, Death Masterfile, Medicare enrollment database, or equivalent Available at measure-specific web page URL identified in S.1 Attachment PCI_Mortality_NO_STEMI_Final.xlsx	Administrative claims, Other, Electronic Clinical Data : Registry Data sources: NCDR CatchPCI Registry Vital Status Source: National Death Index, Death Masterfile, Medicare enrollment database, or equivalent Available at measure-specific web page URL identified in S.1 Attachment PCI_mortality_STEMI_Final.xlsx
Level	Facility	Facility, Population : National	Facility, Population : National
Setting	Hospital/Acute Care Facility	Hospital/Acute Care Facility	Hospital/Acute Care Facility
Numerator Statement	Patients 18 years of age and older with a PCI procedure performed during admission who expired	The outcome for this measure is all–cause death within 30 days following a PCI procedure in patients without STEMI and without cardiogenic shock at the time of the procedure.	The outcome for this measure is all-cause death within 30 days following a PCI procedure in patients with STEMI or cardiogenic shock at the time of the procedure.
Numerator Details	PCI=yes Coding instructions : indicate if the patient had a percutaneous coronary intervention (PCI) Selections: yes/no Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpose of mechanical	Deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI). For the purpose of development and reassessment of the measure, we used a Medicare FFS population age 65 and over. We linked CathPCI registry with corresponding Medicare data and identified: a) in-hospital deaths using the discharge disposition indicator in the Standard Analytic File (SAF)	Deaths can be identified using an external source of vital status, such as the Social Security Administration's Death Master File (DMF) or the Centers for Disease Control and Prevention's National Death Index (NDI). For the purpose of development and reassessment of the measure, we used a Medicare FFS population age 65 and over. We linked CathPCI registry with corresponding Medicare data and identified: a) in-hospital deaths using the discharge disposition indicator in the

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
	coronary revascularization. Source: NCDR Discharge status=deceased Selections: Alive/deceased Coding instructions : Indicate whether the patient was alive or deceased at discharge.	and identified) post-discharge deaths using the Enrollment Database (EDB).	Standard Analytic File (SAF) and identified) post-discharge deaths using the Enrollment Database (EDB).
Denominator Statement	Patients 18 years of age and older with a PCI procedure performed during admission	The target population for this measure includes inpatient and outpatient hospital stays with a PCI procedure for patients at least 18 years of age, without STEMI and without cardiogenic shock at the time of procedure, including outpatient and observation stay patients who have undergone PCI but have not been admitted.	The target population for this measure includes inpatient and outpatient hospital stays with a PCI procedure for patients at least 18 years of age, with STEMI or cardiogenic shock at the time of procedure, including outpatient and observation stay patients who have undergone PCI but have not been admitted. It is unlikely that patients in this cohort would not be admitted to the hospital, but we keep this criterion to be consistent with the complementary non-STEMI, non-cardiogenic shock PCI cohort.
Denominator Details	PCI=yes Coding instructions : indicate if the patient had a percutaneous coronary intervention (PCI) Selections: yes/no Supporting definitions: PCI: A percutaneous coronary intervention (PCI) is the placement of an angioplasty guide wire, balloon, or other device (e.g. stent, atherectomy, brachytherapy, or thrombectomy catheter) into a native coronary artery or coronary bypass graft for the purpos e of mechanical coronary revascularization. Source: NCDR Age: patients must be 18 years of age to be	The time window can be specified from one or more years. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year. The measure cohort is patients undergoing PCI who do not have STEMI and do not have cardiogenic shock. STEMI or cardiogenic shock is defined as present in Version 4.4 of the CathPCI registry as follows: Admissions with PCI are identified by field 5305 (PCI=yes); STEMI or shock is identified by:	The time window can be specified from one or more years. This measure was developed with Medicare claims and CathPCI Registry data from one calendar year. The measure cohort is patients undergoing PCI who have STEMI or cardiogenic shock. STEMI or cardiogenic shock is defined as present in Version 4.4 of the CathPCI registry as follows: Admissions with PCI are identified by field 5305 (PCI=yes);

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
	included in the registry.	(1) Symptoms present on admission = ACS:STEMI (field 5000 = 6) with Time Period Symptom Onset to Admission within 24 hours (field 5005 = 5006, 5007, 5008) or Acute PCI = Yes (field 7035); OR (2) Cardiogenic shock = Yes (field 5060=1)	STEMI or shock is identified by: (1) Symptoms present on admission = ACS:STEMI (field 5000 = 6) with Time Period Symptom Onset to Admission within 24 hours (field 5005 = 5006, 5007, 5008) or Acute PCI = Yes (field 7035); OR (2) Cardiogenic shock = Yes (field 5060=1)
Exclusions	1. NCDR Registry patients who did not have a PCI (Patient admissions with a diagnostic cath only during that admission); 2. Patient admissions with PCI who transferred to another facility on discharge	Hospital stays are excluded from the cohort if they meet any of the following criteria: (1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer). This exclusion is applied in order to avoid assigning the death to two separate admissions. (2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI); (3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures. (4) PCIs for patients with more than 10 days between date of admission and date of PCI.	Hospital stays are excluded from the cohort if they meet any of the following criteria: (1) PCIs that follow a prior PCI in the same admission (either at the same hospital or a PCI performed at another hospital prior to transfer). This exclusion is applied in order to avoid assigning the death to two separate admissions. (2) For patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI); (3) Subsequent PCIs within 30-days. The 30-day outcome period for patients with more than one PCI may overlap. In order to avoid attributing the same death to more than one PCI (i.e. double counting a single patient death), additional PCI procedures within 30 days of the death are not counted as new index procedures.

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.	(4) PCIs for patients with more than 10 days between date of admission and date of PCI. Patients who have a PCI after having been in the hospital for a prolonged period of time are rare and represent a distinct population that likely has risk factors related to the hospitalization that are not well quantified in the registry.
Exclusion Details	All data submissions must pass the data quality and completeness reports to be included. Note: If one or two variables are missing, the value is imputed for certain characteristics . In our data quality program, all key variables in the risk model have a high "inclusion" criteria. This means that, when a hospital submits data to us , they need to have a high level of completeness (around 95-99%) for those variables. If they are not able to meet the criteria in our data quality program, they do not receive risk adjusted mortality for the records they submitted for that quarter.	Excluded hospital stays are identified as follows: (1) PCIs that follow a prior PCI in the same admission or occur during a transfer-in admission (PCI to PCI). For the purposes of development we used Medicare data to define transfers as two admissions that occur within 1 day of each other and identified patients in this cohort who had a PCI during both admissions. This can also be identified in the registry data. (2) Patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI). The specific data fields will depend on the data source used. (3) Not the first hospital stay with a PCI in the 30 days prior to a patient death. These stays are identified by procedure date in the CathPCI Registry and death date in the vital status data source. (4) PCIs for patients with more than 10 days between date of admission and date of PCI. We determine length of stay by subtracting	Excluded hospital stays are identified as follows: (1) PCIs that follow a prior PCI in the same admission or occur during a transfer-in admission (PCI to PCI). For the purposes of development we used Medicare data to define transfers as two admissions that occur within 1 day of each other and identified patients in this cohort who had a PCI during both admissions. This can also be identified in the registry data. (2) Patients with inconsistent or unknown vital status or other unreliable data (e.g. date of death precedes date of PCI). The specific data fields will depend on the data source used. (3) Not the first hospital stay with a PCI in the 30 days prior to a patient death. These stays are identified by procedure date in the CathPCI Registry and death date in the vital status data source. (4) PCIs for patients with more than 10 days between date of admission and date

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		the admission date from the procedure date in the CathPCI Registry.	of PCI. We determine length of stay by subtracting the admission date from the procedure date in the CathPCI Registry
Risk Adjustment	Statistical risk model Risk adjustment methodology is a logistic regression analysis. Weights were assigned to risk factors or variables reflecting the strength of their association to PCI in-hospital mortality. Each patient in a facilities submission is given a risk score to predict risk of in hospital mortality and accurately report risk adjusted mortality rates during hospitalization. Data from 1,208,137 PCI procedures performed between July 2009 and June 2011 at 1,252 CathPCI Registry sites were used to develop both a “full” and pre-catheterization PCI in-hospital mortality risk model using logistic regression. The most noteworthy risk factors or variables in the model include: 1. ST-segment elevation MI defined as a patient who had a STEMI on admis sion, with an onset within 24 hours , or the procedure indication was primary, rescue or facilitated PCI. 2. Discharge status (alive or expired). The interaction between this variable with other variables were key in the analysis. 3. The glomerular filtration rate (GFR) variable is calculated using abbreviated MDRD formula	Statistical risk model The measure estimates the 30-day all-cause risk-standardized mortality rate (RSMR) using a hierarchical logistic regression model. In brief, the approach simultaneously models outcomes at two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals (Normand & Shahian, 2007). To model the log-odds of 30-day all-cause mortality at the patient level, the model adjusts for age and selected clinical covariates. The second level models the hospital-specific intercepts as a normal distribution. The hospital intercept represents the underlying risk of mortality at the hospital level after accounting for patient risk. The hospital-specific intercepts are given a distribution in order to account for the clustering (non-independence) if patients within the same hospital (Normand et al., 2007). See section 2a1.20. Calculation Algorithm/Measure Logic for more detail. The RSMR is calculated as the ratio of the number of “predicted” to the number of “expected” deaths, multiplied by the national unadjusted mortality rate. For each hospital, the “numerator” of the ratio is the number of deaths within 30 days predicted on the basis of the hospital’s performance with its	Statistical risk model The measure estimates the 30-day all-cause risk-standardized mortality rate (RSMR) using a hierarchical logistic regression model. In brief, the approach simultaneously models outcomes at two levels (patient and hospital) to account for the variance in patient outcomes within and between hospitals (Normand & Shahian, 2007). To model the log-odds of 30-day all-cause mortality at the patient level, the model adjusts for age and selected clinical covariates. The second level models the hospital-specific intercepts as a normal distribution. The hospital intercept represents the underlying risk of mortality at the hospital level after accounting for patient risk. The hospital-specific intercepts are given a distribution in order to account for the clustering (non-independence) if patients within the same hospital (Normand et al., 2007). See section 2a1.20. Calculation Algorithm/Measure Logic for more detail. The RSMR is calculated as the ratio of the number of “predicted” to the number of “expected” deaths, multiplied by the national unadjusted mortality rate. For each hospital, the “numerator” of the ratio

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
	[GFR = 186 ×?(last creatinine)-1.154 × (age)-0.203 × (gender factor) × (race factor) where (gender factor) = 1 for male and 0.742 for female, (race factor) = 1.21 for black and 1 for others]. 4. The body mas s index (BMI) (kg/m2) is calculated from height (cm) and weight (kg): BMI = weight × 10000 / (height) 2. All Risk Adjus tment Variables STEMI patients Age BMI Cerebrovascular disease PAD Chronic lung disease Prior PCI Diabetes GFR Renal Failure Left Ventricular Ejection Fraction Cardiogenic shock and PCI status Heart Failure NYHA within 2 weeks Cardiac arrest within 24 hours At least 1 previously treated lesion within 1 month with in-stent thrombosis Highest risk lesion: segment category Number of diseased vessels: 2,3, vs 0,1 Chronic total occlusion	observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus a lower ratio indicates lower-than-expected mortality or better quality and a higher ratio indicates higher-than-expected mortality or worse quality. The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, and then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess hospital performance in any reporting	is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus a lower ratio indicates lower-than-expected mortality or better quality and a higher ratio indicates higher-than-expected mortality or worse quality. The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, and then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		period, we The measure adjusts for the following 16 key variables: Category Variable 1) Age (10 year increments) 2) Body Mass Index (5 kg/m^2 increments) 3) History of Congestive Heart Failure 4) History of cerebrovascular disease 5) History of peripheral vascular disease 6) History of chronic lung disease 7) Diabetes None Non-insulin diabetes Insulin diabetes 8) Glomerular Filtration Rate (GFR) (derived) 0=Not measured 1="GFR<30" 2="30=GFR<60" 3=”60=GFR<90 4="GFR=90" 9) Previous PCI 10) Heart Failure - current status 11) New York Hospital Association Class IV 12) Symptom onset No MI on admission MI within 24 hours of admission MI more than 24 hours prior to admission	characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess hospital performance in any reporting period, we The measure adjusts for the following 13 key variables: Category Variable 1) Age (10 year increments) 2) Body Mass Index (5 kg/m^2 increments) 3) History of cerebrovascular disease 4) History of chronic lung disease 5) Glomerular Filtration Rate (GFR) (derived) 0=Not measured 1="GFR<30" 2="30=GFR<60" 3=”60=GFR<90 4="GFR=90" 6) Previous PCI 7) Heart Failure - current status 8) Cardiogenic shock on admission 9) Symptom onset No MI on admission MI within 24 hours of admission MI more than 24 hours prior to admission 10) Ejection Fraction percent (EF) 1=Not measured

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		13) Ejection Fraction percent (EF) 1=Not measured 2="EF<30" 3="30= EF<45" 4="EF=45" 14) PCI status 1=Elective 2=Urgent 3=Emergency 4=Salvage 15) Highest risk lesion – coronary artery segment category 1=proximal Right Coronary Artery (RCA)/mid Left Anterior Descending (LAD) artery/proximal Circumflex Artery (Cx) 2=proximal LAD 3=Left Main 4= Other 16) Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Class 1 Class 2 or 3 Class 4 References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes	2="EF<30" 3="30= EF<45" 4="EF=45" 11) PCI status 1=Elective 2=Urgent 3=Emergency 4=Salvage 12) Highest risk lesion – coronary artery segment category 1=proximal Right Coronary Artery (RCA)/mid Left Anterior Descending (LAD) artery/proximal Circumflex Artery (Cx) 2=proximal LAD 3=Left Main 4= Other 13) Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Class 1 Class 2 or 3 Class 4 References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached Excel or csv file at

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		Profiling. Stat Sci 22 (2): 206-226. Available in attached Excel or csv file at S.2b	S.2b
Stratification	N/A	Results of this measure will not be stratified.	Results of this measure will not be stratified.
Type Score	Rate/proportion better quality = lower score	Rate/proportion better quality = lower score	Rate/proportion better quality = lower score
Algorithm	1. Remove hospitals who fail data quality and completeness reports as outlined in the NCDR Data Quality Program (further discussed in the Testing Supplement) 2. Count of admissions from data submissions that pass NCDR data inclusion thresholds. 3. Remove patient's subsequent PCIs during the same admission (if the patient had more than one PCI procedure during that admission). 4. Remove admissions without PCI during admission 5. Remove patient admissions with PCI who transferred to another facility on discharge; 6. Calculate measure using weight system based on predictive variables as outlined in the accompanying testing documents and supplemental materials. No diagram provided	The measure score is calculated based on the following steps: 1. Patient cohort is identified based on the inclusion and exclusion criteria (see questions S.7, S.8, S.9, S.10, S.11); 2. Data elements for risk adjustment are collected using the first collected value, as detailed below; 3. Outcome is ascertained from an outside data source, such as the Medicare Enrollment Database (see questions S.4, S.5, S.6) 4. Measure score is calculated with aggregated data across all included sites, as described below. Risk-adjustment variables The measure is adjusted for the variables listed below: 1. Age (10 year increments) 2. Body Mass Index (5 kg/m^2 increments) 3. History of cerebrovascular disease 4. History of chronic lung disease 5. Glomerular Filtration Rate (GFR) (derived) 6. Previous PCI	The measure score is calculated based on the following steps: 1. Patient cohort is identified based on the inclusion and exclusion criteria (see questions S.7, S.8, S.9, S.10, S.11); 2. Data elements for risk adjustment are collected using the first collected value, as detailed below; 3. Outcome is ascertained from an outside data source, such as the Medicare Enrollment Database (see questions S.4, S.5, S.6) 4. Measure score is calculated with aggregated data across all included sites, as described below. Risk-adjustment variables The measure is adjusted for the variables listed below: 1. Age (10 year increments) 2. Body Mass Index (5 kg/m^2 increments) 3. History of cerebrovascular disease 4. History of chronic lung disease 5. Glomerular Filtration Rate (GFR)

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		7. Heart Failure - current status 8. Cardiogenic shock on admission 9. Symptom onset 10. Ejection Fraction percent (EF) 11. PCI status 12. Highest risk lesion – coronary artery segment category 13. Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Measure Score Calculation The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the predicted hospital outcome (the numerator) is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality (better quality) and a higher ratio indicates higher-than-expected	(derived) 6. Previous PCI 7. Heart Failure - current status 8. Cardiogenic shock on admission 9. Symptom onset 10. Ejection Fraction percent (EF) 11. PCI status 12. Highest risk lesion – coronary artery segment category 13. Highest risk lesion: Society for Cardiovascular Angiography and Interventions (SCAI) Measure Score Calculation The RSMR is calculated as the ratio of the number of "predicted" to the number of "expected" deaths, multiplied by the national unadjusted mortality rate. For each hospital, the predicted hospital outcome (the numerator) is the number of deaths within 30 days predicted on the basis of the hospital's performance with its observed case mix, and the "denominator" is the number of deaths expected on the basis of the nation's performance with that hospital's case mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows for a comparison of a particular hospital's performance given its case mix to an

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
		mortality (worse quality). The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess hospital performance in any reporting period, we re-estimate the model coefficients using the years of data in that period. Please see attachments for more details on the calculation algorithm and the value sets for the risk-adjustment variables. References: Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached appendix at A.1	average hospital's performance with the same case mix. Thus, a lower ratio indicates lower-than-expected mortality (better quality) and a higher ratio indicates higher-than-expected mortality (worse quality). The predicted hospital outcome (the numerator) is calculated by regressing the risk factors and the hospital-specific intercept on the risk of mortality, multiplying the estimated regression coefficients by the patient characteristics in the hospital, transforming, then summing over all patients attributed to the hospital to get a value. The expected number of deaths (the denominator) is obtained by regressing the risk factors and a common intercept on the mortality outcome using all hospitals in our sample, multiplying the subsequent estimated regression coefficients by the patient characteristics observed in the hospital, transforming, and then summing over all patients in the hospital to get a value. To assess hospital performance in any reporting period, we re-estimate the model coefficients using the years of data in that period. Please see attachments for more details on the calculation algorithm and the value sets for the risk-adjustment variables. References:

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
			Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22 (2): 206-226. Available in attached appendix at A.1
Submission items	5.1 Identified measures: 0119 : Risk-Adjusted Operative Mortality for CABG 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0535 : 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock 0536 : 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: Measure 119 offers a risk adjusted measure for mortality as does our Risk Adjusted Mortality measure. The patient population is similar in that both these measures evaluate the mortality for patients requiring coronary artery	5.1 Identified measures: 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0229 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart failure (HF) hospitalization for patients 18 and older. 0536 : 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: This measure is most similar to the 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients with ST segment elevation	5.1 Identified measures: 0230 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following acute myocardial infarction (AMI) hospitalization for patients 18 and older. 0229 : Hospital 30-day, all-cause, risk-standardized mortality rate (RSMR) following heart failure (HF) hospitalization for patients 18 and older. 0535 : 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: N/A 5b.1 If competing, why superior or rationale for additive value: This measure is most similar to the 30-day all-cause risk-standardized mortality rate following

	0133: In-Hospital Risk Adjusted Rate of Mortality for Patients Undergoing PCI	0535: 30-day all-cause risk-standardized mortality rate following percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock	0536: 30-day all-cause risk-standardized mortality rate following Percutaneous Coronary Intervention (PCI) for patients with ST segment elevation myocardial infarction (STEMI) or cardiogenic shock
	revascularization. The measure stewarded by STS provides a risk adjusted outcome evaluated at 30 days post their CABG surgery. While the NCDR measure evaluates mortality at discharge from the index admission for the PCI. The method of revascularization also differs between the two measures. 5b.1 If competing, why superior or rationale for additive value: The measures listed above are not competing for two reasons. The STS measure evaluates patients who are treated surgically and does so at a 30 day end point. The measures stewarded by CMS evaluate the PCI patient population, yet they do so at a 30 day end point. Measure 535 and 536 stewardship will become ACC sometime during the NQF cardiovascular endorsement process. The variables in measures 535, 536 and 133 are harmonized in that they use the same clinical registry data elements and definitions (derived from the CathPCI Registry). Therefore while they are related, ACC does not consider these competing measures.	myocardial infarction (STEMI) and with cardiogenic shock. Its additive value stems from the target population of without STEMI and without shock patients.	percutaneous coronary intervention (PCI) for patients without ST segment elevation myocardial infarction (STEMI) and without cardiogenic shock. Its additive value stems from the target population of STEMI and/or shock patients.

Comparison of NQF #0521 and NQF #2450

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
Steward	American College of Cardiology	Centers for Medicare & Medicaid Services
Description	Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented	Percentage of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure, and appropriate actions were taken when the patient exhibited symptoms of heart failure
Type	Process	Process
Data Source	Electronic Clinical Data : Registry This measure is currently being used in the ACCF PINNACLE registry for the outpatient office setting.This registry is located at www.pinnacleregistry.org No data collection instrument provided Attachment S.2b_NQF_2450_Heart_Failure_Symptom_and_Activity_Assessment_Value_Set-635234005641496564.xls	Electronic Clinical Data The measure is calculated based on data obtained from the Home Health Outcome and Assessment Information Set (OASIS-C), which is a core standard assessment data set that home health agencies integrate into their own patient-specific, comprehensive assessment to identify each patient's need for home care. The data set is the foundation for valid and reliable information for patient assessment, care planning, and service delivery in the home health setting, as well as for the home health quality assessment and performance improvement program. HH agencies are required to collect OASIS data on all non-maternity Medicare/Medicaid patients, 18 or over, receiving skilled services. Data are collected at specific time points (admission, resumption of care after inpatient stay, recertification every 60 days that the patient remains in care, transfer, and at discharge). HH agencies are required to encode and transmit patient OASIS data to the state OASIS repositories. Each HHA has on-line access to outcome and process measure reports based on their own OASIS data submissions, as well as comparative state and national aggregate reports, case mix reports, and potentially avoidable event reports. CMS regularly collects OASIS data from the states for storage in the national OASIS repository, and makes measures based on these data (including the Heart Failure Symptoms Assessed measure) available to consumers and to the general public through the Medicare Home Health Compare website. Available at measure-specific web page URL identified in S.1 Attachment OASISQM_data_dictionary.xls
Level	Clinician : Individual	Facility
Setting	Ambulatory Care : Clinician Office/Clinic, Home Health, Post Acute/Long Term Care Facility : Inpatient Rehabilitation Facility,	Home Health

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
	Post Acute/Long Term Care Facility : Nursing Home/Skilled Nursing Facility, Ambulatory Care : Outpatient Rehabilitation	
Numerator Statement	Patient visits with quantitative results of an evaluation of both current level of activity and clinical symptoms documented	Number of home health episodes of care during which patients with heart failure were assessed for symptoms of heart failure and appropriate actions were taken when the patient exhibited symptoms of heart failure.
Numerator Details	Evaluation and quantitative results documented should include: • Documentation of New York Heart Association (NYHA) Class OR • Documentation of completion of a valid, reliable, disease-specific instrument (eg, Kansas City Cardiomyopathy Questionnaire, Minnesota Living with Heart Failure Questionnaire, Chronic Heart Failure Questionnaire) Definitions: The NYHA functional classification reflects a subjective assessment by a healthcare provider of the severity of a patient's symptoms. Patients are assigned to one of the following 4 classes • Class I: patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain. • Class II: patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea, or anginal pain. • Class III: patients with marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnea, or anginal pain. • Class IV: patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased. Patient-reported health status as assessed by a structured survey/questionnaire instrument offers another, more patient-	Patient episodes in which the patient has a diagnosis of heart failure, defined as a response of anything other than NA to M1500 (Symptoms in Heart Failure Patients) OR in which there is an ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of one of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes] PLUS appropriate actions were taken in response to heart failure symptoms, defined as a response of anything other than 0 to M1510 (Heart Failure Follow-up) OR the patient had no symptoms of heart failure, defined as M1500 = 0 – No

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
	centric approach to assessing and summarizing the patient's overall heart failure symptom burden. These instruments serve as important constructs for delivering and evaluating heart failure care. For EHR options: eSpecification developed and is included in this submission.	
Denominator Statement	All patient visits for those patients aged 18 years and older with a diagnosis of heart failure	Number of home health episodes of care ending with a discharge or transfer to inpatient facility during the reporting period for patients with a diagnosis of heart failure, other than those covered by generic or measure-specific exclusions.
Denominator Details	For EHR options: eSpecification developed and is included in this submission.	A start/resumption of care assessment ((M0100) Reason for Assessment = 1 (Start of cA start/resumption of care assessment ((M0100) Reason for Assessment = 1 (Start of care) or 3 (Resumption of care)) paired with a corresponding discharge/transfer assessment ((M0100) Reason for Assessment = 6 (Transfer to inpatient facility – not discharged), 7 (Transfer to inpatient facility – discharged), 8 (Death at home), or 9 (Discharge from agency)), other than those covered by denominator exclusions PLUS - the response to M1500 (Symptoms in Heart Failure Patients) is anything other than NA OR in which there is an ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of one of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes]
Exclusions	Not applicable. No exclusions for this measure.	Episodes in which the patient did not have a diagnosis of heart failure and was not assessed to have symptoms of heart failure since the last OASIS assessment. Episodes ending in patient death.
Exclusion Details	Not applicable. No exclusions for this measure.	Denominator Exclusion Details Measure-Specific Exclusions: Number of home health patient episodes of care where at end of

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
		episode: - (M0100) Reason for Assessment = 8 (death at home) AND Patient was not assessed to have symptoms of heart failure, defined as the response to M1500 (Symptoms in Heart Failure Patients) is 0 (No) AND Patient does not have a diagnosis of heart failure, defines as no ICD-9 value in M1020/M1022 (Primary/Secondary Diagnoses) of any of the following codes: 402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9. [Note: Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes] Generic Exclusions: Medicare-certified home health agencies are currently required to collect and submit OASIS data only for adult (aged 18 and over) non-maternity Medicare and Medicaid patients who are receiving skilled home health care. Therefore, maternity patients, patients less than 18 years of age, non-Medicare/Medicaid patients, and patients who are not receiving skilled home services are all excluded from the measure calculation. However, the OASIS items and related measures could potentially be used for other adult patients receiving services in a community setting, ideally with further testing. The publicly-reported data on CMS' Home Health Compare web site also repress cells with fewer than 20 observations, and reports for home health agencies in operation less than six months.
Risk Adjustment	No risk adjustment or risk stratification Not applicable. No risk adjustment or stratification.	No risk adjustment or risk stratification NA - process measure
Stratification	Consistent with CMS' Measures Management System Blueprint and recent national recommendations put forth by the IOM and NQF to standardize the collection of race and ethnicity data, we encourage the results of this measure to be stratified by race, ethnicity, administrative sex, payer and primary written and	NA - not stratified

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
	spoken language, and have included these variables as recommended data elements to be collected.	
Type Score	Rate/proportion better quality = higher score	Rate/proportion better quality = higher score

Algorithm	To calculate performance rates:
	1) Find the patients who meet the initial patient population (ie, the general group of patients that a set of performance measures is designed to address).
	2) From the patients within the initial patient population criteria, find the patients who qualify for the denominator (ie, the specific group of patients for inclusion in a specific performance measure based on defined criteria). Note: in some cases the initial patient population and denominator are identical.
	3) From the patients within the denominator, find the patients who qualify for the Numerator (ie, the group of patients in the denominator for whom a process or outcome of care occurs). Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator
	If the patient does not meet the numerator, this case represents a quality failure.
	Calculation algorithm is included in data dictionary/code table attachment (see A.1). Available in attached appendix at A.1
		This measure excludes patients who do not have a diagnosis of heart failure (identified as no heart failure ICD-9 codes in M1020 or M1022 and M1500_SYMTM_HRT_FAILR_PTNTS[2] = NA), as well as any assessments that ended in death. The exclusion also applies to the corresponding measures for short term and long term episodes of care. A diagnosis of heart failure is defined as a ICD-9 value found under M1020 or M1022 of one of the following codes:
		402.01 402.11 402.91 404.01 404.03 404.11 404.13 404.91 404.93 428.0 428.1 428.20 428.21 428.22 428.23 428.30 428.31 428.32 428.33 428.40 428.41 428.42 428.43 428.9.
		Attachment A maps these ICD-9 codes to their corresponding ICD-10-CM codes, which include I11.0 I13.0 I13.2 I50.9 I50.1 I50.20 I50.21 I50.22 I50.23 I50.30 I50.31 I50.32 I50.33 I50.40 I50.41 I50.42 I50.43 I50.9
		IF (M1500_SYMTM_HRT_FAILR_PTNTS[2] <>NA OR (Heart Failure DGN identified in M1020_PRI_DGN_ICD1 OR M1022_OTH_DGN1_ICD_1 through M1022_OTH_DGN5_ICD_1)
		THEN
		HAS_HEART_FAILURE=1
		ELSE
		HAS_HEART_FAILURE=0
		IF HAS_HEART_FAILURE = 1 AND M0100_ASSMT_REASON[2] <> 08
		THEN
		IF M1500_SYMTM_HR_FAILR_PTNTS[2]=0 OR M1510_HRT_FAILR_NO_ACTN[2] = 0
		THEN
		Heart_Failure_Assessed_Treated_All = 1
		ELSE
		Heart_Failure_Assessed_Treated_All = 0
		END IF No diagram provided

Submission	5.1 Identified measures: 0078 : Heart Failure (HF) : Assessment of	5.1 Identified measures:

	2450: Heart Failure: Symptom and Activity Assessment	0521: Heart Failure Symptoms Assessed and Addressed
items	Clinical Symptoms of Volume Overload (Excess) 5a.1 Are specs completely harmonized? No 5a.2 If not completely harmonized, identify difference, rationale, impact: The specifications are not harmonized because this measure is intended to replace Measure 0078: Assessment of Clinical Symptoms of Volume Overload. The intention is for Measure 0078 to be retired. 5b.1 If competing, why superior or rationale for additive value: Not applicable. No competing measures.	5a.1 Are specs completely harmonized? 5a.2 If not completely harmonized, identify difference, rationale, impact: see 5b.1 5b.1 If competing, why superior or rationale for additive value: There are no measures that conceptually address both the same measure focus (heart failure assessment and intervention) and the same target population (homebound patients). We found one process measure on Heart Failure Assessment 0078 Heart Failure (HF) : Assessment of Clinical Symptoms of Volume Overload (Excess. Measure 0521 is harmonized with 0078 is that it defines HF using the same codes and identifies HF symptoms the same way (symptoms identified by clinical heart failure guidelines including dyspnea, orthopnea, edema, or weight gain). Measure 0078 has a different target population (ambulatory adults) and does not include a requirement for intervention.