This form contains the measure information submitted by stewards. Blank fields indicate no information was provided. Attachments also may have been submitted and are provided to reviewers. The subcriteria and most of the footnotes from the evaluation criteria are provided in Word comments within the form and will appear if your cursor is over the highlighted area. Hyperlinks to the evaluation criteria and ratings are provided in each section.

**TAP/Workgroup** (if utilized): Complete all yellow highlighted areas of the form. Evaluate the extent to which each subcriterion is met. Based on your evaluation, summarize the strengths and weaknesses in each section.

**Note**: If there is no TAP or workgroup, the SC also evaluates the subcriteria (yellow highlighted areas).

**Steering Committee**: Complete all pink highlighted areas of the form. Review the workgroup/TAP assessment of the subcriteria, noting any areas of disagreement; then evaluate the extent to which each major criterion is met; and finally, indicate your recommendation for the endorsement. Provide the rationale for your ratings.

**Evaluation ratings of the extent to which the criteria are met**

- **C** = Completely (unquestionably demonstrated to meet the criterion)
- **P** = Partially (demonstrated to partially meet the criterion)
- **M** = Minimally (addressed BUT demonstrated to only minimally meet the criterion)
- **N** = Not at all (NOT addressed; OR incorrectly addressed; OR demonstrated to NOT meet the criterion)
- **NA** = Not applicable (only an option for a few subcriteria as indicated)

---

### Measure Descriptive Information

<table>
<thead>
<tr>
<th>Measure Title:</th>
<th>Beta-blocker prescribed at discharge for AMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brief description of measure:</td>
<td>Percentage of acute myocardial infarction (AMI) patients who are prescribed a beta-blocker at hospital discharge</td>
</tr>
<tr>
<td>Type of Measure:</td>
<td>Process</td>
</tr>
<tr>
<td>If included in a composite or paired with another measure, please identify composite or paired measure:</td>
<td>N/A</td>
</tr>
<tr>
<td>National Priority Partners Priority Area:</td>
<td>Population health</td>
</tr>
<tr>
<td>IOM Quality Domain:</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Consumer Care Need:</td>
<td>Living with illness</td>
</tr>
</tbody>
</table>

### Conditions for Consideration by NQF

Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards:

- **A.** The measure is in the public domain or an intellectual property (measure steward agreement) is signed. Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.
  - **A.1** Do you attest that the measure steward holds intellectual property rights to the measure and the right to use aspects of the measure owned by another entity (e.g., risk model, code set)? **Yes**
  - **A.2** Indicate if Proprietary Measure (as defined in measure steward agreement): **Yes**
  - **A.3** Measure Steward Agreement: Government entity and in the public domain - no agreement necessary **N**
  - **A.4** Measure Steward Agreement attached: **Y**

- **B.** The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least

Rating: C=Completely; P=Partially; M=Minimally; N=Not at all; NA=Not applicable
### 1. IMPORTANCE TO MEASURE AND REPORT

**Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in or overall poor performance. Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria.**

#### 1a. High Impact

**Comment [KP1]:** 1a. The measure focus addresses:
- a specific national health goal/priority identified by NQF's National Priorities Partners; OR
- a demonstrated high impact aspect of healthcare (e.g., affects large numbers, leading cause of morbidity/mortality, high resource use (current and/or future), severity of illness, and patient/societal consequences of poor quality).

**Comment [KP2]:** 1b. Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating considerable variation, or overall poor performance, in the quality of care across providers and/or population groups (disparities in care).

#### 1a.1 Demonstrated High Impact Aspect of Healthcare: Affects large numbers, Leading cause of morbidity/mortality, Severity of illness, Patient/societal consequences of poor quality

1a.2

#### 1a.3 Summary of Evidence of High Impact: In 2010, an estimated 785,000 Americans will have a new coronary event, and approximately 470,000 will have a recurrent event. An estimated additional 195,000 silent first myocardial infarctions occur each year. Approximately every 25 seconds, an American will have a coronary event, and approximately every minute, one will die. In 2004, AMI resulted in 695,000 hospital stays and $31 billion in health expenditures. The risk of further cardiovascular complications, including recurrent MI, sudden cardiac death, heart failure, stroke, and angina pectoris, among AMI survivors is substantial.


#### 1b. Opportunity for Improvement

**Comment [KP1]:** 1b. Benefits (improvements in quality) envisioned by use of this measure; Beta-blockers reduce morbidity and mortality. Hospital performance rates have gradually increased over the years this measure...
has been reported to the public. Providers understand the importance of sending their patients home on beta-blockers. Ongoing use of this measure will help ensure that high performing providers maintain high performance and the relatively lower performing providers have an impetus to improve.

1b.2 Summary of data demonstrating performance gap (variation or overall poor performance) across providers:

National performance rates:
2Q09: 98.1%
3Q09: 98.2%
4Q09: 98.3%
1Q10: 98.2%

1b.3 Citations for data on performance gap:

Clinical warehouse data:
2Q09: 101,277 AMI patients, 3,068 hospitals
3Q09: 97,277 AMI patients, 3,040 hospitals
4Q09: 103,296 AMI patients, 3,063 hospitals
1Q10: 105,436 AMI patients, 3,111 hospitals

1b.4 Summary of Data on disparities by population group:

At the univariate analysis level (unadjusted odds ratios), rates ranged from 96.3% for Hispanic/Latinos, to 97.8% for Native-Americans and African-Americans, 98.2% for Asians/Pacific Islanders, and 98.3% for White/Caucasians. The difference from the lowest to the highest rates was 2.0 percentage points. The rate for Caucasians was higher than the rates for all minority groups.

1b.5 Citations for data on Disparities:

2009 Clinical warehouse data (Total 382,023 patients with race not missing): 304,013 Caucasian patients, 40,008 African-American patients, 28,382 Hispanic patients, 7,738 Asian/Pacific Islander patients, and 1,882 Native American patients.

1c. Outcome or Evidence to Support Measure Focus

1c.1 Relationship to Outcomes (For non-outcome measures, briefly describe the relationship to desired outcome. For outcomes, describe why it is relevant to the target population): Long-term use of beta-blockers for patients who have suffered an acute myocardial infarction reduces mortality and morbidity. Studies have identified a 20% reduction in this risk. Further, there is evidence of effectiveness in broad populations of patients with AMI. National guidelines strongly recommend long-term beta-blocker therapy for the secondary prevention of subsequent cardiovascular events in patients discharged after AMI. The initiation and indefinite continuation of beta-blockers is considered a Class I recommendation in ACC/AHA UA/NSTEMI and STEMI guidelines.

1c.2-3. Type of Evidence: Evidence-based guideline, Randomized controlled trial, Systematic synthesis of research, Meta-analysis

1c.4 Summary of Evidence (as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome): Beta-blockers lower systolic blood pressure and heart rate (which in turn reduce myocardial oxygen consumption or MVO2). The benefits of beta-blocker therapy for secondary prevention (i.e., among patients who have experienced a myocardial infarction) are well established. Beta-blockers reduce mortality and morbidity. Data from large trials suggest that therapy should be continued for at least 2 to 3 years. Among patients with ST-segment elevation myocardial infarction (STEMI), the greatest mortality benefit accrues to patients with the greatest baseline risk: those with impaired ventricular function or ventricular arrhythmias and those who have not undergone reperfusion. However, long-term beta-blocker therapy is recommended for all AMI survivors, including those who have undergone revascularization because of evidence of a mortality benefit in such patients.

1c.5 Rating of strength/quality of evidence (also provide narrative description of the rating and by whom): ACCF/AHA Task Force on Practice Guidelines: [UA/NSTEMI] Level of Evidence B: Data derived from a single randomized trial, or nonrandomized studies; Limited populations evaluated; [STEMI] Level of Evidence A: 

Rating: C=Completely; P=Partially; M=Minimally; N=Not at all; NA=Not applicable

Comment [k3]: 1 Examples of data on opportunity for improvement include, but are not limited to: prior studies, epidemiologic data, measure data from pilot testing or implementation. If data are not available, the measure focus is systematically assessed (e.g., expert panel rating) and judged to be a quality problem.

Comment [k4]: 1c. The measure focus is: 
• an outcome (e.g., morbidity, mortality, function, health-related quality of life) that is relevant to, or associated with, a national health goal/priority, the condition, population, and/or care being addressed; 
• OR
• an intermediate outcome, process, structure, etc., there is evidence that supports the specific measure focus as follows: 
• if intermediate outcome: evidence that the measured intermediate outcome (e.g., blood pressure, HbA1c) leads to improved health/avoidance of harm or cost/benefit. 
• Process: evidence that the measured clinical or administrative process leads to improved health/avoidance of harm and if the measure focus is on one step in a multi-step care process, it measures the step that has the greatest effect on improving the specified desired outcome(s). 
• Structure: evidence that the measured structure supports the consistent delivery of effective processes or access that lead to improved health/avoidance of harm or cost/benefit. 
• Patient experience: evidence that an association exists between the measure of patient experience of health care and the desired outcome(s).

Comment [k5]: 4 Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multi-step process, the step with the greatest effect on the desired outcome should be selected as the focus of measurement. For example, although assessment of immunization status and recommending immunization are necessary steps, they are not sufficient to achieve the desired impact on health status: patients must be vaccinated to achieve immunity. This does not preclude consideration of measures of preventive screening interventions where there is a

Comment [k6]: 3 The strength of the body of evidence for the specific measure focus should be systematically assessed and rated (e.g., USPSTF grading system http://www.usphs.gov/clinical/uspsf07/methods /benefit.html). If the USPSTF grading system was not used, the grading system is explained including how it relates to the USPSTF grades or why it does not. However, evidence is not limited to quantitative studies and the best type of evidence depends upon the question being studied (e.g., randomized controlled trials appropriate for studying drug efficacy are not well suited for complex system changes). When qualitative studies are used, appropriate qualitative research criteria are used to judge the strength of the evidence.
Data derived from multiple randomized clinical trials or meta-analyses; Multiple populations evaluated.

1c.6 Method for rating evidence: The methodology used by the ACCF/AHA Task Force on Practice Guidelines is fully documented in their publication “Methodology Manual and Policies From The ACCF/AHA Task Force on Practice Guidelines” (http://assets.cardiosource.com/Methodology_Manual_for_ACC_AHA_Writing_Committees.pdf). The guidelines are based upon a comprehensive assessment, both electronic and manual, of the English-language medical literature. This search focuses on high-quality randomized controlled trials, meta-analyses and systematic reviews, and when applicable observational studies. In some cases where higher quality data is not available, observational studies and case series are also considered. The quality of the design and execution of these studies is determined. When appropriate, data tables are generated from the available literature. After a review of the available literature, the writing committee rates the evidence according to the schemes outlined in their publication.

1c.7 Summary of Controversy/Contradictory Evidence: Aside from avoiding use in patients with clear contraindications to beta-blocker therapy, there is substantial support in existing guidelines for the use of chronic beta-blocker therapy for secondary prevention in patients surviving AMI.

1c.8 Citations for Evidence (other than guidelines):


1c.9 Quote the Specific guideline recommendation (including guideline number and/or page number):

[UA/NSTEMI]

1. Beta blockers are indicated for all patients recovering from UA/NSTEMI unless contraindicated. (For those at low risk, see Class IIa recommendation below). Treatment should begin within a few days of the event, if not initiated acutely, and should be continued indefinitely.

[STEMI]

Beta Blockers (p. 236)

It is beneficial to start and continue beta-blocker therapy indefinitely in all patients who have had MI, acute coronary syndrome, or LV dysfunction with or without HF symptoms, unless contraindicated.

1c.10 Clinical Practice Guideline Citation:

1c.11 National Guideline Clearinghouse or other URL:
http://content.onlinejacc.org/cgi/reprint/50/7/e1.pdf
http://content.onlinejacc.org/cgi/reprint/51/2/210.pdf,

1c.12 **Rating of strength of recommendation** (also provide narrative description of the rating and by whom):
Rating made by ACCF/AHA Task Force on Practice Guidelines: [UA/NSTEMI and STEMI] Class I recommendation - Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective. Benefit >> Risk. Procedure/treatment should be performed/administered; [UA/NSTEMI] Class Ila recommendation - Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment. Weight of evidence/opinion is in favor of usefulness/efficacy. Benefit > Risk. Additional studies with focused objectives needed. It is reasonable to perform procedure/treatment.

1c.13 **Method for rating strength of recommendation** (If different from USPSTF system, also describe rating and how it relates to USPSTF):

Both the ACCF/AHA Guidelines and the USPSTF assess evidence with respect to two parameters: 1) the magnitude of the benefit, and 2) the certainty of this benefit. However, they use different coding systems. In ascertaining magnitude of the benefit, the ACCF/AHA uses a Class I-III scale and the USPSTF uses a high-moderate-low scale. In determining the certainty of this benefit, the ACCF/AHA uses levels of evidence A-C and USPSTF uses a high-moderate-low scale.

1c.14 **Rationale for using this guideline over others:**
The ACCF/AHA guidelines are widely accepted national guidelines that address the therapy of patients with AMI; they use an explicit and transparent methodology; and have thus served as the foundation of national quality measures.

**TAP/Workgroup:** What are the strengths and weaknesses in relation to the subcriteria for **Importance to Measure and Report?**

<table>
<thead>
<tr>
<th>Steering Committee: Was the threshold criterion, Importance to Measure and Report, met?</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>

2. **SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES**

| Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **(evaluation criteria)** | 8 |

2a. **MEASURE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Do you have a web page where current detailed measure specifications can be obtained?</th>
<th>Za-specs</th>
</tr>
</thead>
<tbody>
<tr>
<td>C=Completely; P=Partially; M=Minimally; N=Not at all; NA=Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

2a.1 **Numerator Statement (Brief, text description of the numerator - what is being measured about the target population, e.g. target condition, event, or outcome):**

Comment [K7]: USPSTF grading system
http://www.ahrq.gov/clinic/uspstf/grades.htm:
A - The USPSTF recommends the service. There is high certainty that the net benefit is substantial.
B - The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.
C - The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small. Offer or provide this service only if other considerations support the offering or providing the service in an individual patient.
D - The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. I - The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.
AMI patients who are prescribed a beta-blocker at hospital discharge

2a.2 Numerator Time Window (The time period in which cases are eligible for inclusion in the numerator): From hospital arrival to time of hospital discharge.

2a.3 Numerator Details (All information required to collect/calculate the numerator, including all codes, logic, and definitions):
Refer to http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228760129036:
- Section 1 - Data Dictionary | Alphabetical Data Dictionary - pages 1-88 through 1-89.
- Appendices | Appendix C - Medication Tables - pages Appendix C-7 through Appendix C-9.
- Section 2 - Measurement Information | Section 2.1 - Acute Myocardial Infarction (AMI) - pages AMI-5-1 through AMI-5-5.

2a.4 Denominator Statement (Brief, text description of the denominator - target population being measured):
AMI patients (International Classification of Diseases, 9th revision, Clinical Modification [ICD-9-CM] principal diagnosis code of AMI: 410.00, 410.01, 410.10, 410.11, 410.20, 410.21, 410.30, 410.31, 410.40, 410.41, 410.50, 410.51, 410.60, 410.61, 410.70, 410.71, 410.80, 410.81, 410.90, 410.91)

2a.5 Target population gender: Female, Male

2a.6 Target population age range: Greater than or equal to 18 years old

2a.7 Denominator Time Window (The time period in which cases are eligible for inclusion in the denominator):
From hospital arrival to time of hospital discharge.

2a.8 Denominator Details (All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions):
ICD-9-CM Principal Diagnosis codes:
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

2a.9 Denominator Exclusions (Brief text description of exclusions from the target population): Exclusions
• <18 years of age
• Patients who have a length of stay greater than 120 days
• Patients enrolled in clinical trials
• Discharged to another hospital
• Expired
• Left against medical advice

Comment [k9]: 11 Risk factors that influence outcomes should not be specified as exclusions.
12 Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.
2a.10 Denominator Exclusion Details (All information required to collect exclusions to the denominator, including all codes, logic, and definitions):

Refer to:
http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228760129036:
- Appendices | Appendix C - Medication Tables PDF - pages Appendix C-7 through Appendix C-9, and Appendix H - Miscellaneous Tables - page Appendix H-5.
- Section 2 - Measurement Information | Section 2.1 - Acute Myocardial Infarction (AMI) - pages AMI-5 plus AMI-5-1 through AMI-5-5.

2a.11 Stratification Details/Variables (All information required to stratify the measure including the stratification variables, all codes, logic, and definitions):

N/A

2a.12-13 Risk Adjustment Type: No risk adjustment necessary

2a.14 Risk Adjustment Methodology/Variables (List risk adjustment variables and describe conceptual models, statistical models, or other aspects of model or method):

N/A

2a.15-17 Detailed risk model available Web page URL or attachment:

2a.18-19 Type of Score: Rate/proportion

2a.20 Interpretation of Score: Better quality = Higher score

2a.21 Calculation Algorithm (Describe the calculation of the measure as a flowchart or series of steps):

Refer to:

2a.22 Describe the method for discriminating performance (e.g., significance testing):

Benchmarks are established using the ABC methodology, based on the actual performance of the top facilities. ABC benchmarks identify superior performance and encourage poorer performers to improve. The methodology is a data-driven, peer-group performance feedback used to positively affect outcomes.

2a.23 Sampling (Survey) Methodology: If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate):

Patients admitted to the hospital for inpatient acute care with an ICD-9-CM Principal Diagnosis Code for AMI as defined in section 2a.8, a patient age greater than or equal to 18 years, and a length of stay less than or equal to 120 days would be included in the initial patient population and eligible to be sampled.

Monthly Sample Size Based on Population Size (Average monthly initial patient population size: Minimum required sample size):

>= 516: 104
131-515: 20% of Initial Patient Population size
26-130: 26
< 26: 100%

2a.24 Data Source (Check the source(s) for which the measure is specified and tested):

2a.25 Data source/data collection instrument (Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.):

Centers for Medicare & Medicaid Services (CMS) Abstraction & Reporting Tool (CART). Vendor tools also available.
### Testing/Analysis

**2b. Reliability testing**

**2b.1 Data/sample (description of data/sample and size):** CDAC (Clinical Data Abstraction Center) validation sample: 3Q09.

**2b.2 Analytic Method (type of reliability & rationale, method for testing):**

CDAC validation sampling involves SDPS selection of sample of 5 cases/quarter across all topics (AMI, HF, Pneumonia, etc.) from each hospital with a minimum of 6 discharges (across all topics) in the Clinical Data Warehouse within 4 months + 15 days following 3Q09. Hospital-abstracted data is compared to CDAC-adjudicated data.

**2b.3 Testing Results (reliability statistics, assessment of adequacy in the context of norms for the test conducted):**

- Beta-Blocker Prescribed at Discharge - 97.8%
- Clinical Trial - 98.9%
- Comfort Measures Only - 94.3%
- Reason for No Beta-Blocker at Discharge - 77.7%

**2c. Validity testing**

**2c.1 Data/sample (description of data/sample and size):** Face validity is regularly assessed with the Technical Expert Panel responsible for reviewing and supporting the measure topic.

**2c.2 Analytic Method (type of validity & rationale, method for testing):**

Face validity

**2c.3 Testing Results (statistical results, assessment of adequacy in the context of norms for the test conducted):**

N/A

### Exclusions Justified

**2d.1 Summary of Evidence supporting exclusion(s):**

The exclusions of age < 18 years, length of stay > 120 days, and enrollment in a clinical trial are common to the other measures in the AMI measure set, and to the inpatient Hospital Inpatient Quality Reporting Program measure set in general. Patients with documented comfort measures only or those discharged to hospice are appropriate exclusions, as the goal in these cases is palliative care. Therefore, the non-use of beta-blockers is often clinically appropriate. Patients who leave against medical advice or who expire are appropriately excluded, and it is sensible for those who are discharged to another hospital (where the patient goes on to continue acute care treatment) to be omitted as well. Lastly, there are clinically important

<table>
<thead>
<tr>
<th>Test</th>
<th>C</th>
<th>P</th>
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<td>C</td>
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<td>M</td>
<td>N</td>
<td>NA</td>
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</tbody>
</table>

**Comment [KP10]:** 2b. Reliability testing demonstrates the measure results are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period.

**Comment [KP11]:** 8 Examples of reliability testing include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; test-retest for survey items. Reliability testing may address the data items or final measure score.

**Comment [KP12]:** 3c. Validity testing demonstrates that the measure reflects the quality of care provided, adequately distinguishing good and poor quality. If face validity is the only validity addressed, it is systematically assessed.

**Comment [KP13]:** 9 Examples of validity testing include, but are not limited to: determining if measure scores adequately distinguish between providers known to have good or poor quality assessed by another valid method; correlation of measure scores with another valid indicator of quality for the specific topic; ability of measure scores to predict scores on some other related valid measure; content validity for multi-item scales/tests. Face validity is a subjective assessment by experts of whether the measure reflects the quality of care (e.g., whether the proportion of patients with BP < 140/90 is a marker of quality). If face validity is the only validity addressed, it is systematically assessed (e.g., ratings by relevant stakeholders) and the measure is judged to represent quality care for the specific topic and that the measure focus is the most important aspect of quality for the specific topic.

**Comment [KP14]:** 2d. Clinically necessary measure exclusions are identified and must be:

- supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;
- AND
  - clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;
- AND
  - precisely defined and specified: if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of cases excluded, exclusion rates by type of exclusion); if patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that it strongly impacts performance on the measure and the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category _[3]_).
elements) are found to cause the difference in performance, they are reviewed for possible updates.

If measure specifications (algorithms, data performance and encourage poorer performers to improve. The methodology is a data-driven, peer-group performance feedback used to positively affect outcomes. If measure specifications (algorithms, data performance and encourage poorer performers to improve. The methodology is a data-driven, peer-group performance feedback used to positively affect outcomes.

2d.3 Data/sample (description of data/sample and size): Clinical warehouse data: 144,251 AMI patients, 3,503 hospitals, 1Q10.

2d.4 Analytic Method (type analysis & rationale):
A frequency count was conducted to calculate the percentages outlined in section 2d.5. Frequency counts are a simple, efficient way to determine the occurrence of specific values of a data element in a given data set.

2d.5 Testing Results (e.g., frequency, variability, sensitivity analyses):

Ratios of Exclusion:
- Patients with comfort measures only documented: 5.8%
- Patients enrolled in clinical trials: 5%
- Discharged/transferred to another hospital for inpatient care, discharged/transferred to a federal health care facility, discharged/transferred to hospice, expired, or left against medical advice or discontinued care: 14.7%
- Patients with a documented reason for no beta-blocker at discharge: 5.9%

2f. Identification of Meaningful Differences in Performance

2f.1 Data/sample (description of data/sample and size): Clinical warehouse data: 101,277 AMI patients, 3,068 hospitals

2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance (type of analysis & rationale):
Analysts review quarterly benchmarks established (using the ABC methodology) and trends to identify differences in performance scores and investigate the possible causes. ABC benchmarks identify superior performance and encourage poorer performers to improve. The methodology is a data-driven, peer-group performance feedback used to positively affect outcomes. If measure specifications (algorithms, data elements) are found to cause the difference in performance, they are reviewed for possible updates.

2e. Risk Adjustment for Outcomes/Resource Use Measures

2e.1 Data/sample (description of data/sample and size): N/A

2e.2 Analytic Method (type of risk adjustment, analysis, & rationale):
N/A

2e.3 Testing Results (risk model performance metrics):
N/A

2e.4 If outcome or resource use measure is not risk adjusted, provide rationale: N/A

Comment [KP16]: 2e. For outcome measures and other measures (e.g., resource use) when indicated:
- an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified and is based on patient clinical factors that influence the measured outcome (but not disparities in care) and are present at start of care; and benchmark not defined; OR rationale/data support no risk adjustment.

Comment [KP17]: 13 Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care such as race, socioeconomic status, gender (e.g., poorer treatment outcomes of African American men with prostate cancer, inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than adjusting out differences.

Comment [KP18]: 2f. Data analysis demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful differences in performance.

Comment [K19]: 14 With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74% v. 75%) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall poor performance may not demonstrate much variability across providers.
2f.3 Provide Measure Scores from Testing or Current Use (description of scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance):

National performance rates:
2Q09: 98.1% (benchmark 99.9%)
3Q09: 98.2% (benchmark 100.0%)
4Q09: 98.3% (benchmark 99.9%)
1Q10: 98.2% (benchmark 100.0%)

2g. Comparability of Multiple Data Sources/Methods

2g.1 Data/sample (description of data/sample and size):
Both paper records and electronic health records can be used to collect data. Some allowances have been made as facilities incorporate EHRs in their facilities because vendors do not utilize identical data fields, but customize products according to facility need and preferences.

2g.2 Analytic Method (type of analysis & rationale):
No tests have been performed on this measure to determine comparability of sources (paper medical record vs. EHR).

2g.3 Testing Results (e.g., correlation statistics, comparison of rankings):
N/A

2h. Disparities in Care

2h.1 If measure is stratified, provide stratified results (scores by stratified categories/cohorts): Not stratified, but results according to race, sex, etc can be determined.

2h.2 If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans:
Since the preliminary univariate analyses suggest potential disparities (the largest difference is greater than or equal to 2.0 percentage points as described in 1b.4), further analyses are needed to control for the simultaneous effect of other potential factors such as age, gender, comorbidity, and hospital characteristics and to take into account the correlation/cluster effect of patients discharged from the same hospitals.

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for Scientific Acceptability of Measure Properties?

Steering Committee: Overall, to what extent was the criterion, Scientific Acceptability of Measure Properties, met?
Rationale:

3. USABILITY

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

3a. Meaningful, Understandable, and Useful Information

3a.1 Current Use: In use

3a.2 Use in a public reporting initiative (disclosure of performance results to the public at large) (If used in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). If not publicly reported, state the plans to achieve public reporting within 3 years):
Hospital Inpatient Quality Reporting Program:
- http://www.hospitalcompare.hhs.gov/

Rating: C=Completely; P=Partially; M=Minimally; N=Not at all; NA=Not applicable
3a.3 If used in other programs/initiatives (If used in quality improvement or other programs/initiatives, name of initiative(s), locations, Web page URL(s). If not used for QI, state the plans to achieve use for QI within 3 years):

Hospital Inpatient Quality Reporting Program (Measures can be used by individual hospitals for internal quality improvement):

- http://www.hospitalcompare.hhs.gov/

Additionally, the Joint Commission also uses this measure for accreditation.

Testing of Interpretability (Testing that demonstrates the results are understood by the potential users for public reporting and quality improvement)

3a.4 Data/sample (description of data/sample and size): Unknown. [Feedback on the Hospital Compare website (used for public reporting) is collected through another contractor.]

3a.5 Methods (e.g., focus group, survey, QI project):
Voluntary electronic survey by visitors to website.

3a.6 Results (qualitative and/or quantitative results and conclusions):
Not available.

3b/3c. Relation to other NQF-endorsed measures

3b.1 NQF # and Title of similar or related measures:
NQF #0613: MI - Use of Beta Blocker Therapy

(for NQF staff use) Notes on similar/related endorsed or submitted measures:

3b. Harmonization
If this measure is related to measure(s) already endorsed by NQF (e.g., same topic, but different target population/setting/data source or different topic but same target population):

3b.2 Are the measure specifications harmonized? If not, why?
No, this measure’s specifications are not harmonized with NQF #0613 measure specifications, as the latter’s measure population uses the outpatient setting and includes patients diagnosed with MI at any time in the past. This measure is concentrated on care of the AMI patient who is admitted for inpatient care; a completely different focus in terms of setting and care. NQF #0613 does provide for the exclusion of patients with an allergy to beta-blockers in the past or those with documentation of heart block, similar to this measure, but it also automatically excludes patients with asthma, COPD, bradycardia, hypotension, aortic stenosis, evidence of metastatic disease or active treatment of malignancy (chemotherapy or radiation therapy) in the last 6 months, patients who have been in a skilled nursing facility in the last 3 months, patients on peripheral artery disease medications, and heart transplant patients - Conditions which our team believes are relative contraindications which require that the physician specifically document a linkage to the non-use of beta-blockers (vs. automatic exclusion).

3c. Distinctive or Additive Value
3c.1 Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures:
No NQF-endorsed measures with same topic and target population.

5.1 If this measure is similar to measure(s) already endorsed by NQF (i.e., on the same topic and the same target population), Describe why it is a more valid or efficient way to measure quality:
No NQF-endorsed measures with same topic and target population.

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for Usability?
4. FEASIBILITY

**4a. Data Generated as a Byproduct of Care Processes**

4a.1-2 How are the data elements that are needed to compute measure scores generated?

Data generated as byproduct of care processes during care delivery (Data are generated and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition; coding/abstraction performed by someone other than person obtaining original information (E.g., DRG, ICD-9 codes on claims, chart abstraction for quality measure or registry).

**4b. Electronic Sources**

4b.1 Are all the data elements available electronically? (Elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims)

No

4b.2 If not, specify the near-term path to achieve electronic capture by most providers.

Retooling work with HHS is expected to be completed in 2011.

**4c. Exclusions**

4c.1 Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?

No

4c.2 If yes, provide justification.

**4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences**

4d.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results.

1. Since the time of last NQF endorsement (May 2007), the HeartCare measures team met with other topic teams within the Hospital Inpatient Quality Reporting Program (namely, children’s asthma and surgical care) to examine the medication constructs being used. The measure designs at that time automatically excluded patients with a documented contraindication or reason to a medication from the measure, regardless of whether the medication ended up being prescribed. That type of design was resulting in a substantial amount of “false exclusions” from the measure. The decision was made to rearrange the measure such that patients who were prescribed the medication would remain in the measure (i.e., be included in the numerator) when a reason for not prescribing the medication was documented, effective with April 1, 2009 discharges. It is believed that the number of false exclusions has significantly decreased as a result.

2. Because the denominator exclusion “Patients with a documented reason for no beta-blocker at discharge” allows for any physician/advance practice nurse/physician assistant/pharmacist-documented “other reason” for not prescribing a beta-blocker at discharge to count as an exclusion, overuse of this exclusion has the potential for distorting performance rates. However, overall trends in measure numerator and denominator counts do not suggest obvious gaming of the measure. There has been no increasing trend in denominator counts. Nevertheless, exclusion rates for this measure will continue to be monitored for consistency, from quarter to quarter.

3. The data elements used in this measure are closely tracked. Questions submitted by abstractors are recorded, and trends related to published abstraction guidelines and disagreements over measure inclusions and exclusions in general are discussed in-depth every 6 months. Revisions in measure specifications, including data element definitions, are made as issues surface (e.g., how to handle documentation of a hold on a beta-blocker at discharge or a planned delay to start a beta-blocker after discharge, what constitutes acceptable physician documentation of a reason for not prescribing beta-blockers). The frequency of questions pertaining to each data element are tracked by the Hospital Inpatient Quality Reporting Program (QIQC). Clearly the number of questions a data element receives is another indication of how difficult the
specifications for the measure might be. Frequency reports are reviewed regularly, to help identify where issues in data element definitions may exist. Of note, in an August 2010 report run by the Hospital Inpatient Quality Reporting Program QIOSC, the number of questions about the abstraction of the two data elements unique to this measure, Beta-Blocker Prescribed at Discharge and Reason for No Beta-Blocker at Discharge, amounted to 28, only 6.1% of the total 458 Quest questions received for AMI for that month. Lastly, CDAC validation reports (which compare hospital data to CDAC data) and internal CDAC abstractor accuracy reports are monitored, to ensure good quality data. In sum, issues which may surface in questions submitted by users and CDAC validation/accuracy reports will continue to be closely monitored to identify any additional problems, and revisions will be made if warranted.

4e. Data Collection Strategy/Implementation

4e.1 Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing/frequency of data collection, patient confidentiality, time/cost of data collection, other feasibility/implementation issues:
The reordering of the "medication prescribed" and "reason for no medication" specifications done for April 1, 2009+ discharges (as described in section 4d.1) reduces abstraction burden. Abstractors no longer have to do an exhaustive search for acceptable reasons for not prescribing beta-blockers at discharge in cases where the patient was prescribed a beta-blocker, saving valuable abstraction time.

4e.2 Costs to implement the measure (costs of data collection, fees associated with proprietary measures): Varies according to data collection method (use of vendor) and type of abstractor used to collect clinical data. We have not received feedback that this measure has caused undue burden to the facilities collecting data.

4e.3 Evidence for costs: N/A

4e.4 Business case documentation: N/A

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for Feasibility?

Steering Committee: Overall, to what extent was the criterion, Feasibility, met?
Rationale:

RECOMMENDATION

(for NQF staff use) Check if measure is untested and only eligible for time-limited endorsement.

Steering Committee: Do you recommend for endorsement?
Comments:

CONTACT INFORMATION

Co.1 Measure Steward (Intellectual Property Owner)
Co.1 Organization
Centers for Medicare & Medicaid Services, 7500 Security Boulevard, Baltimore, Maryland, 21244-1850

Co.2 Point of Contact
Kristie, Baus, RN, MS, kristie.baus@cms.hhs.gov, 410-786-8161

Measure Developer if different from Measure Steward
Co.3 Organization
Centers for Medicare & Medicaid Services, 7500 Security Boulevard, Baltimore, Maryland, 21244-1850
### Co.4 Point of Contact
Kristie Baus, RN, MS, kristie.baus@cms.hhs.gov, 410-786-8161

### Co.5 Submitter If different from Measure Steward POC
Jo, DeBuhr, RN, BSN, broncosrule@att.net, 303-457-3195, OFMQ

### Co.6 Additional organizations that sponsored/participated in measure development
The Joint Commission

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### ADDITIONAL INFORMATION

**Workgroup/Expert Panel involved in measure development**

Ad.1 Provide a list of sponsoring organizations and workgroup/panel members’ names and organizations. Describe the members’ role in measure development.

This measure is reviewed and maintained by the Heart Care Technical Expert Panel. Quarterly teleconferences are held to discuss issues pertinent to this measure (and its specifications) and potential revisions. Current members:

- Frederick Masoudi, MD, MSPH, Workgroup Chair: Denver Health Medical Center, University of Colorado at Denver and Health Sciences Center
- Don Casey, MD, MPH, MBA: VP Quality and Chief Medical Officer, Atlantic Health, Rep. of the American College of Physicians
- Elizabeth Delong, PhD: Professor and Chair, Duke University, Biostatistics and Bioinformatics, Co-Director, Outcomes Research and Assessment
- Joseph Drozda, MD: Clinical Investigator, Mercy Health Research, Executive Committee Member, PCPI, Rep. of American Medical Association
- John P. Erwin, III: Professor of Medicine, Co-Director, Cardiovascular Fellowship Program, Hospital Champion, Acute Myocardial Infarction Quality Improvement, Scott and White Hospital and Clinic
- Kerri Fei: Senior Policy Analyst, Measure Development Operations, American Medical Association
- Susan Fitzgerald, RN, MS: Associate Director, Science and Quality, American College of Cardiology
- David C. Goff, MD, PhD: Professor and Chair, Department of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest University School of Medicine
- Kathleen Grady, CNS: Administrative Director, Center for Heart Failure, Bluhm Cardiovascular Institute Division of Cardiothoracic Surgery, Northwestern Memorial Hospital
- Darryl Gray, MD: Medical Officer, Agency for Healthcare Research and Quality
- Lee Green, MD: Professor, University of Michigan Medical School
- Ed Havranek, MD: Professor of Medicine, Denver Health Medical Center, University of Colorado School of Medicine
- Paul A. Heidenreich: Assistant Professor of Medicine, Associate Professor by courtesy of Health Research and Policy at the VA Palo Alto Health Care System and CHP/PCOR Fellow
- Alice C. Jacobs, MD: Professor of Medicine, Director, Cardiac Cath Lab, Boston University Medical Center
- Marvin Konstam, MD: Director, Cardiovascular Center, Tufts Medical Center, Rep. of Heart Failure Society of America
- Harlan Krumholz, MD: Harold H. Hines, Jr. Professor of Medicine and Epidemiology and Public Health, Yale University School of Medicine
- Jerod Loeb, PhD: Executive Vice President, Quality Measurement & Research, The Joint Commission
- Ann [Hiniker] Loth, RN, MS, CNS: Certified Clinical Nurse Specialist, Mayo Foundation
- Joseph Messer, MD, MAcc: Professor of Medicine, Rush University Medical Center, Rep. of American Medical Association
- Eric Peterson, MD, MPH: Professor of Medicine, Director Cardiovascular Research, Duke Clinical Research Institute, Duke University Medical Center
- Martha Radford, MD: Chief Quality Officer, Professor of Medicine, New York University School of Medicine
- Rose Marie Robertson, MD: Chief Science Officer, American Heart Association
- John Remsfeld, MD, PhD, FACC, FAHA: Staff Cardiologist, Cardiovascular Outcomes Researcher, Denver Veterans Affairs Medical Center
- David Shahian, MD: Research Director, Center for Quality and Safety, Massachusetts General Hospital
- Melanie Shab, RN, BSN: Associate Director, Performance Measures and Data Standards, American College of Cardiology
- John Spertus, MD, MPH, FACC: Director of Cardiovascular Education and Outcomes Research, Mid America Heart Institute, University of Missouri
- Samantha Tierney: Senior Policy Analyst I, American Medical Association
Gayle Whitman, PhD, RN, FAAN, FAHA: Sr Vice President, Office of Science Operations, American Heart Association
Janet Wright, MD, FACC: Senior Vice President for Science and Quality, American College of Cardiology
Contractor Staff:
Dale Bratzler, DO, MPH: CEO, Principal Clinical Coordinator, Oklahoma Foundation for Medical Quality
Jo DeBuhr, RN: Project Specialist, AMI/HF Inpatient Measures, Oklahoma Foundation for Medical Quality/Colorado Foundation for Medical Care
Chris Leber, RN: Project Specialist, AMI/HF Inpatient Measures, Oklahoma Foundation for Medical Quality/Colorado Foundation for Medical Care
CMS Staff:
Kristie Baus, MS, RN: Government Task Leader, Centers for Medicare and Medicaid Services
David Nilasena, MD: Chief Medical Officer, Region VI, Centers for Medicare and Medicaid

Ad.2 If adapted, provide name of original measure: N/A
Ad.3-5 If adapted, provide original specifications URL or attachment

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.6 Year the measure was first released: 1999
Ad.7 Month and Year of most recent revision: 10, 2010
Ad.8 What is your frequency for review/update of this measure? Every 6 months
Ad.9 When is the next scheduled review/update for this measure? 07, 2011

Ad.10 Copyright statement/disclaimers:

Ad.11 -13 Additional Information web page URL or attachment:

Date of Submission (MM/DD/YY): 12/27/2010
1c. The measure focus is:
   • an outcome (e.g., morbidity, mortality, function, health-related quality of life) that is relevant to, or
     associated with, a national health goal/priority, the condition, population, and/or care being addressed;
   OR
   • if an intermediate outcome, process, structure, etc., there is evidence that supports the specific measure focus
     as follows:
     o Intermediate outcome – evidence that the measured intermediate outcome (e.g., blood pressure, Hba1c)
       leads to improved health/avoidance of harm or cost/benefit.
     o Process – evidence that the measured clinical or administrative process leads to improved health/avoidance
       of harm and
       if the measure focus is on one step in a multi-step care process, it measures the step that has the greatest
       effect on improving the specified desired outcome(s).
     o Structure – evidence that the measured structure supports the consistent delivery of effective processes or
       access that lead to improved health/avoidance of harm or cost/benefit.
     o Patient experience – evidence that an association exists between the measure of patient experience of health
       care and the outcomes, values and preferences of individuals/ the public.
     o Access – evidence that an association exists between access to a health service and the outcomes of, or
       experience with, care.
     o Efficiency – demonstration of an association between the measured resource use and level of performance
       with respect to one or more of the other five IOM aims of quality.

4 Clinical care processes typically include multiple steps: assess → identify problem/potential problem →
choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the
measure focus is one step in such a multi-step process, the step with the greatest effect on the desired outcome
should be selected as the focus of measurement. For example, although assessment of immunization status and
recommending immunization are necessary steps, they are not sufficient to achieve the desired impact on health
status - patients must be vaccinated to achieve immunity. This does not preclude consideration of measures of
preventive screening interventions where there is a strong link with desired outcomes (e.g., mammography) or
measures for multiple care processes that affect a single outcome.

2d. Clinically necessary measure exclusions are identified and must be:
   • supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;
     AND
   • a clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;
     AND
   • precisely defined and specified:
     – if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are
       computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of
       cases excluded, exclusion rates by type of exclusion);
     if patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that it
     strongly impacts performance on the measure and the measure must be specified so that the information about
     patient preference and the effect on the measure is transparent (e.g., numerator category computed separately,
     denominator exclusion category computed separately).