NATIONAL QUALITY FORUM

TO: Cardiovascular Endorsement Maintenance Steering Committee

FR: Reva Winkler, MD, MPH; Ashley Morsell, MPH; Kathryn Streeter, MS

SU: Follow-up from Phase I

DA: March 28, 2011

After the February 15-16, 2011 meeting, NQF staff contacted the measure developers for follow-up on issues raised by the Steering Committee, particularly the request for more data on disparities. The responses from the developers are attached.

MEASURE DEVELOPER RESPONSES

National Committee for Quality Assurance

- 0073 IVD: blood pressure management
- 0068 IVD: Use of aspirin or another antithrombotic
- 0075 Complete lipid profile and LDL control (<100)
- 0071 AMI-persistence of beta blocker therapy

PCPI/ACC/AHA

- 0067 CAD: anti-platelet therapy
- 0074 CAD: Lipid control
- 0066 CAD: ACEI/ARB therapy
- 0070 CAD: beta blocker – prior MI

Minnesota Community Measurement

- 0076 Optimal vascular care

Center for Medicare and Medicaid Services

- 0289 Median to ECG
- 0132 Aspirin at arrival for AMI
- 0286 Aspirin at arrival
- 0163 Primary PCI within 90 minutes of arrival
- 0164 Fibrinolytic therapy received within 30 minutes
- 0288 and 0287 Fibrinolytic therapy received within 30 minutes of ED arrival/median time
- 0290 Median time to transfer to another facility

CMS Disparities spreadsheets (2 attachments)

NATIONAL QUALITY FORUM

Follow-up issues from the February 15-16, 2011 meeting of the Cardiovascular E&M Steering Committee for measures submitted by NCQA:

0073 IVD: blood pressure management (NCQA)

Issue raised by Steering Committee: What is the evidence for the <140/80 target?
Developer response:

- At this time, NCQA would like to withdraw the <140/80 threshold, and only continue on with <140/90, with the intention of reviewing/revising when JNC 8 is released in January 2012.
- The 140/80 measure was applicable only to patients with diabetes as a primary diagnosis and to patients with established CV disease. This was a change in a measure regarding optimal control for blood pressure (BP) in diabetic patients that was based on prior guidelines (JNC-7 and others) that recommended a more aggressive BP target (130/80) for patients with primary CV disease or CV equivalents such as diabetes.
- Since the joint NCQA-PCPI diabetes advisory group was dependent on updates in evidence-based guidelines (rather than performing independent review of primary evidence) prior to implementing measure changes, the 140/80 level (which replaced the prior optimal BP control measure for diabetes and CV of 130/80) was based primarily on the recent guideline released by the Veteran's Health Administration for BP control in patients with CV disease or equivalents (diabetes).
- While NCQA hoped to incorporate the JNC-8 and other new guidelines that took into account new evidence in BP control in diabetes or CV disease, the NCQA-PCPI group felt that given the measure's active status in reporting, leaving the measure at 130/80 until other existing guidelines (which range from 130/80 and include 140/85 and other levels) were modified based on new evidence was not optimal. The group agreed to use the VAH guideline as the primary basis in the meantime.

Issue raised by Steering Committee: No upper age limit – concerns about appropriate target levels of BP for the elderly; evidence indicates that elderly should not lower systolic to <140.
Developer response:

- There is no simple rule to establish an upper age limit for most measures. In the HEDIS Controlling High Blood Pressure health plan measure for patients with hypertension, the NCQA advisory groups and the CPM set the upper age limit at 85 given that by that age-and above that age, there is a substantial proportion of individuals for whom controlling the BP at 140/90 may not be appropriate. We agree measures should be harmonized in terms of upper age limits, but this should be done only after careful evaluation by multiple measure owners including NCQA, PCPI/ACC, and MNCM in concert with NQF.
- The NCQA CV measurement advisory panel has discussed the need for a separate threshold for the elderly population; however, they recommended we wait for the JNC-8 guidelines for further guidance in developing a new measure.

Issue raised by Steering Committee: Home BP values not accepted – evidence is powerful; a weakness of the measure
Developer response:

- NCQA's advisory groups in multiple areas have considered this issue on multiple occasions. There is a significant problem with respect to standardization and how to correlate the home BP levels to those obtained in RCT's using office-based BP levels.
- There are also currently no CPT codes or commonly used other codes that capture home BP values reported by patients, nor any standardized way of recording the results in paper or in electronic medical records.
- NCQA believes our advisory groups would be open again to consideration of including home BP monitoring but ONLY after full testing of the feasibility and reliability of including home BP monitoring and

the home BP measure would be dated and assessed as the "most recent" BP.

Issue raised by Steering Committee: No risk adjustment – what about patients that should not have BP lowered to this degree or are on multiple medications or at risk for hypotension?

Developer response:

- NCQA advisory groups, and specifically those in CV disease, have considered the issue of risk adjustment of measures. In prior attempts to develop a risk adjustment, it has been difficult to separate which risk factors prevent clinicians from achieving a set level of BP control, and more directly, how those risks are recorded in paper charts. In terms of hypertension, we have found that this problem is not regularly recorded or coded, or found guidelines to suggest how frequent or proximate the problem needs to be to exclude the patient
- We fully support development and testing of risk adjustment for use of measures with advanced electronic clinical data systems but do not as yet have data from those settings.

Issue raised by Steering Committee: Conflicting information on exclusion for ESRD in submission materials

Developer response: Corrected submission form: added exclusions for ESRD, pregnancy, and admission to non-acute inpatient facility.

Issue raised by Steering Committee: CLARIFY 1) level of measurement ; the 2) data source(s) for the different levels of measurement, especially health plan; 3) differences in specifications for different levels of measurement

Developer response:

1) **Level of Measurement**: This metric is considered an indicator under the composite measure of Comprehensive Ischemic Vascular Disease, which is reported at the physician level only.
2) **Data Source(s):** Satisfactory data sources include electronic health records, medical records and claims data.
3) **Differences in Specifications Attributed to Level of Measurement:** Since this metric is reported at the physician level only, there are no observable differences.

Issue raised by Steering Committee: Disparities

Developer response: NCQA has participated with IOM and others in attempting to include information on disparities in measure data collection. However, at the present time, this data, at all levels (claims data, paper chart review, and electronic records), is not coded in a standard manner, and is incompletely captured. There are no consistent standards for what entity (physician, group, plan, employer) should capture and report this data. While "requiring" reporting of the data could push the field forward, it has been our position that doing so would create substantial burden with inability to use the data because of its inconsistency. At the present time, we agree with the IOM report that disparities are best considered by the use of zip code analysis which has limited applicability in most reporting situations. At the health plan level, for HEDIS health plan data collection, NCQA does have extensive data related to our use of stratification by insurance status (Medicare, Medicaid and private-commercial) and would strongly recommend this process where the data base supporting the measurement includes this information. However, we believe that the measure specifications should NOT require this since the measure is still useful where the data needed to determine disparities cannot be ascertained from the data available.

Issue raised by Steering Committee: The Committee acknowledges there are too many conflicting guidelines for BP targets and recommends that NQF select a single national guideline to align all measures. The Committee suggests aligning to JNC8 (due January 2012). Would NCQA agree to align measures to JNC8 going forward?

Developer response:

- NCQA's advisory groups are tasked with thoroughly evaluating all evidence-based guidelines, establishing the measure whenever possible based on their assessment of the "best in class" guidelines. For that reason, we ask our advisory groups to avoid primary evidence review themselves.

- In the past, JNC recommendations have received very careful attention, and like guidelines from the USPSTF, are often considered by the review panels as "best in class". NCQA tried to delay the review of the measures until the release of the JNC8 guideline; however, NQF re-endorsement schedule and internal deadlines deterred this effort. We would be very open to reconsideration when the JNC8 guidelines are released.

Issue raised by Steering Committee: Harmonization with MNCM 0076 Optimal vascular care – IVD specifications; age inclusions; align BP target at <140/90
Developer response: NCQA has worked with MNCM on several initiatives and is open to harmonizing this measure with their measure. The process for harmonization for most specifications must be carried out in a careful and deliberate manner since changes in specifications can affect both trendability of results as well as affect completeness, accuracy and reliability of data collection.

Issue raised by Steering Committee: Conditions: Would consider revised measure if remove BP <140/80 and some consideration for the elderly. Recognize need to review/revise when JNC 8 is released in January 2012.
Developer response: At this time, NCQA would like to withdraw the <140/80 threshold, and only continue on with <140/90, with the intention of reviewing/revising the threshold and the age criteria when JNC 8 is released in January 2012.

Developer response: Modifications have been made to the following Measure Submission Form sections:
De.2: slight word editing
De.3: measure part of comprehensive set
2a.1: removed <140/80 threshold, added medical record specifications, corrected table numbers
2a3: corrected text errors
2a.4:removed codes from this section
2a.5: checked both genders
2a.7: modified denominator time window
2a.8: added in all codes
2a.9 added in exclusions description
2a.10 added in exclusions details
2a.24: unchecked survey as a data source
1c.9: removed reference to lower BP threshold
2b.1-2b.3 added in information on: Beta-binomial reliability data, inter-rater reliability of obtaining BP from chart and reliability of determining the representative BP
2h.2: added disparities language
3a.2: removed plan reference, added HSRP
3a.3: removed references to QC & ABHP
3b.2: added harmonization language

0068 IVD: Use of aspirin or another antithrombotic (NCQA)

Issue raised by Steering Committee: Title and description don't match numerator
Developer response: The title and description have been updated in the measure submission form to indicate the following:
Title: Ischemic Vascular Disease (IVD): Use of aspirin or another antithrombotic
Description: The percentage of patients 18 years of age and older who were discharged alive for acute myocardial infarction (AMI), coronary artery bypass graft (CABG) or percutaneous coronary interventions

(PCI) from January 1-November 1 of the year prior to the measurement year, ***or*** who had a diagnosis of ischemic vascular disease (IVD) during the measurement year and the year prior to the measurement year and who had the following during the measurement year.
Use of aspirin or another antithrombotic

Issue raised by Steering Committee: CLARIFY: "prescribed or documentation of counseling"- how is it documented?
Developer response: In the initial measure description, language was included incorrectly about documentation of counseling. It has since been corrected as indicated in response above.

Issue raised by Steering Committee: CLARIFY 1) level of measurement ; the 2) data source(s) for the different levels of measurement, especially health plan; 3) differences in specifications for different levels of measurement
Developer response:

1. **Level of Measurement**: This metric is considered an indicator under the composite measure of Comprehensive Ischemic Vascular Disease, which is reported at the physician level only.
2. **Data Source(s):** Satisfactory data sources include electronic health records, medical records and claims data.
3. **Differences in Specifications Attributed to Level of Measurement:** Since this metric is reported at the physician level only, there are no observable differences.

Issue raised by Steering Committee: Possible unintended consequences due to lack of exclusions. How do you know certain exclusions are <5%?
Developer response:

- NCQA advisory groups have repeatedly examined the use of exclusions and exceptions and after much deliberation have continued to recommend NOT including exclusions and exceptions in this measure.
- While some exclusions may be coded and included in administrative data and are relatively easily accessible for chart review, a recent paper by Kmetik et al., indicates that MOST exclusions are relative. Many of the relative contraindications appear to be either minor in nature, or can be overcome by use of different medications. In terms of exceptions (patients removed from the denominator by the clinician at the time of service) , the same research showed that the rates of physician added exceptions were quite low, inconsistent in rate, and many had to come from extensive manual chart review even from an EMR. Codes (like CPT-II codes) that might be used to indicate exceptions are not widely used, and at the present time cannot be easily audited for accuracy.
- In addition, the measure allows for physician discretion in prescribing alternative oral anti-platelet therapies when aspirin is contraindicated.
- The performance goal is not 100%.

Kmetik KS, O'Toole MF, Bossley H, Brutico CA, Fischer G, Grund SL, Gulotta BM, Hennessey M, Kahn S, Murphy KM, Pacheco T, Pawlson LG, Schaeffer J, Schwamberger PA, Scholle SH, Wozniak G. Exceptions to outpatient quality measures for coronary artery disease in electronic health records. Ann Intern Med. 2011 Feb 15;154(4):227-34.

Issue raised by Steering Committee: Is this measure "topped out"? How do we know when no further opportunity exists since exclusions aren't captured and target is not 100%?
Developer response: Performance reported for this measure is likely high due to our use of Heart Stroke Recognition Program (HSRP) results. Routine clinical practice will likely fall below high levels reported by clinicians seeking HSRP recognition.

Issue raised by Steering Committee: Disparities - payer data only

- **Developer response:** The data included in the submission is from physicians applying for the NCQA Heart/Stroke Recognition program. There is no payer data included in this measure submission.

NCQA has participated with IOM and others in attempting to include information on disparities in measure data collection. However, at the present time, this data, at all levels (claims data, paper chart review, and

electronic records), is not coded in a standard manner, and is incompletely captured. There are no consistent standards for what entity (physician, group, plan, employer) should capture and report this data. While "requiring" reporting of the data could push the field forward, it has been our position that doing so would create substantial burden with inability to use the data because of its inconsistency. At the present time, we agree with the IOM report that disparities are best considered by the use of zip code analysis which has limited applicability in most reporting situations. At the health plan level, for HEDIS health plan data collection, NCQA does have extensive data related to our use of stratification by insurance status (Medicare, Medicaid and private-commercial) and would strongly recommend this process where the data base supporting the measurement includes this information. However, we believe that the measure specifications should NOT require this since the measure is still useful where the data needed to determine disparities cannot be ascertained from the data available.

Issue raised by Steering Committee: Harmonization with PCPI – specifications of CAD within the IVD; anti-thrombotics inclusions

Developer response: As noted, NCQA is open to harmonizing this and other measures with other developers' measures and while in some other areas, PCPI and NCQA measures have been harmonized, no direct harmonization has been performed for CV measures at this time. NQF is preparing cross walks for both competing measures' evaluation and harmonization. NCQA and AMA PCPI-ACC_AHA have initiated discussions regarding harmonizing elements within this measure where there is potential for harmonization. Harmonization efforts will continue in areas of exclusions and whether it is possible (and/or alternative strategies) to harmonize denominator conditions (IVD vs. CAD) and the potential risks and benefits to populations being measured. There remain significant differences in the respective measures related to complexity, feasibility, standardization, and medication prescribing. As previously noted, the process for harmonization for most specifications must be carried out in a careful and deliberate manner since changes in specifications can affect both trendability of results as well as affect completeness, accuracy and reliability of data collection.

Issue raised by Steering Committee: Harmonization with MNCM 0076 Optimal vascular care – IVD specifications; age inclusions; anti-thrombotics inclusions

Developer response: NCQA has worked with MNCM on several initiatives and is open to harmonizing this measure with their measure. The process for harmonization for most specifications must be carried out in a careful and deliberate manner since changes in specifications can affect both trendability of results as well as affect completeness, accuracy and reliability of data collection.

Developer response: Modifications have been made to the following Measure Submission Form sections:

De.2: modified description of measure
De.3: measure part of comprehensive set
2a.1: clarified numerator description
2a.4: clarified denominator description, removed codes from this section
2a.5: checked both genders
2a.7: modified denominator time window
2a.8: added in all codes
2b.1-2b.3 added in reliability testing information
2h.2: added disparities language
3a.2: removed plan reference, added HSRP
3a.3: removed references to QC & ABHP
3b.2: added harmonization language

0075 Complete lipid profile and LDL control < 100 (NCQA)

Issues raised by Steering Committee: CLARIFY: Description seems to indicate two numerators but not in specifications

Developer response: The title, description and specifications have been updated in the measure submission form to be consistent with measurement of both a lipid profile and LDL control <100.

Issues raised by Steering Committee: CLARIFY age: description and target age fields say 18-75 years but denominator description says 18 years of age and older

Developer response:

- The submission has been corrected in the description to read 18 years of age and older.
- We agree measures should be harmonized in terms of upper age limits, but this should be done only after careful evaluation by multiple measure owners including NCQA, PCPI/ACC, and MNCM in concert with NQF.

Issues raised by Steering Committee: CLARIFY 1) level of measurement ; the 2) data source(s) for the different levels of measurement, especially health plan; 3) differences in specifications for different levels of measurement

Developer response:

1. **Level of Measurement**: The lipid profile and LDL<100 measures are indicators within the composite measure of Comprehensive Ischemic Vascular Disease, which is reported at the physician level
2. **Data Source(s):** Satisfactory data sources at the physician level include electronic health records, medical records and claims data.
3. **Differences in Specifications Attributed to Level of Measurement:** Since this metric is reported at the physician level only, there are no observable differences.

Issues raised by Steering Committee: What about intolerance to statins? How do you know this is < 5%?

Developer response:

- NCQA advisory groups have repeatedly examined the use of exclusions and exceptions and after much deliberation have continued to recommend NOT including exclusions and exceptions in this measure.
- While some exclusions to statins are coded and included in administrative data and are relatively easily accessible for chart review, a recent paper by Kmetik et al., indicates that MOST exclusions are relative- so that the majority of patients who have "contraindications" to statins are actually ON statins. Many of the relative contraindications (muscle cramping, GI disturbance etc) appear to be either minor in nature, or can be overcome by use of different medications. In terms of exceptions (patients removed from the denominator by the clinician at the time of service) , the same research showed that the rates of physician added exceptions were quite low, inconsistent in rate, and many had to come from extensive manual chart review even from an EMR. Codes (like CPT-II codes) that might be used to indicate exceptions are not widely used, and at the present time cannot be easily audited for accuracy.
- In addition this measure is focused on the reducing cholesterol, but is not prescriptive about the use of a statin. There are other mechanisms by which cholesterol reduction can be achieved (i.e., modifications in diet, exercise, etc.)

Kmetik KS, O'Toole MF, Bossley H, Brutico CA, Fischer G, Grund SL, Gulotta BM, Hennessey M, Kahn S, Murphy KM, Pacheco T, Pawlson LG, Schaeffer J, Schwamberger PA, Scholle SH, Wozniak G. Exceptions to outpatient quality measures for coronary artery disease in electronic health records. Ann Intern Med. 2011 Feb 15;154(4):227-34.

Issues raised by Steering Committee: Disparities

Developer response: NCQA has participated with IOM and others in attempting to include information on disparities in measure data collection. However, at the present time, this data, at all levels (claims data, paper chart review, and electronic records), is not coded in a standard manner, and is incompletely captured. There are no consistent standards for what entity (physician, group, plan, employer) should capture and report this data. While "requiring" reporting of the data could push the field forward, it has been our position that doing so would create substantial burden with inability to use the data because of its inconsistency. At the present time, we agree with the IOM report that disparities are best considered by the use of zip code analysis which has limited applicability in most reporting situations. At the health plan level, for HEDIS health plan data collection, NCQA does have extensive data related to our use of stratification by insurance status (Medicare, Medicaid and private-commercial) and would strongly recommend this process where the data base supporting the measurement includes this information. However, we believe that the measure specifications

should NOT require this since the measure is still useful where the data needed to determine disparities cannot be ascertained from the data available.

Issues raised by Steering Committee: Harmonization with MNCM 0076 Optimal vascular care – IVD specifications; age inclusions;
Developer response: NCQA has worked with MNCM on several initiatives and is open to harmonizing this measure with their measure. The process for harmonization for most specifications must be carried out in a careful and deliberate manner since changes in specifications can affect both trendability of results as well as affect completeness, accuracy and reliability of data collection.

Issues raised by Steering Committee: Harmonization with PCPI – specifications of CAD within the IVD;
Developer response: NCQA is open to harmonizing this measure with other developers' measures; however, the ACC-AHA has established a process for measure development, so no direct harmonization has been performed at this time. NQF is preparing cross walks for both competing measures' evaluation and harmonization. NCQA and AMA PCPI-ACC AHA have initiated discussions regarding harmonizing elements within this measure where there is potential for harmonization. Efforts will continue to determine whether it is possible (and/or alternative strategies) to harmonize denominator conditions (IVD vs. CAD) and the potential risks and benefits to populations being measured. There remain significant differences in the respective measures related to complexity, feasibility, standardization, and medication prescribing.

Developer response: Modifications have been made to the following Measure Submission Form sections:

De.2: modified description of measure	De.3: measure part of comprehensive set
1b.2: added performance data	2a.1: clarified numerator description
2a.4: clarified denominator description	2a.5: checked both genders
2a.7: modified denominator time window	2a.8: modified text
2a.9: deleted text	2b.1-2b.3 added in reliability testing information
2h.2: added disparities language	3a.2: removed plan reference, added HSRP
3a.3: removed references to QC & ABHP	3b.2: added harmonization language

0071 AMI – persistence of beta blocker therapy (NCQA)

Issues raised by Steering Committee: CLARIFY age: description says " patients age 35 years and older" and the specifications indicate "18 years and older"
Developer response: Age clarified within measure submission form. The measure looks at patients 18 years and older.

Issues raised by Steering Committee: CLARIFY 1) level of measurement ; the 2) data source(s) for the different levels of measurement, particularly clinician-level; 3) differences in specifications for different levels of measurement
Developer response:

1. **Level of Measurement**: This measure is reported both at the health plan and physician levels.
2. **Data Source(s):**
    a. **Physician level**: Electronic health records, paper medical records & claims data.
    b. **Health Plan level**: Electronic data (i.e., medical and pharmacy claims).
3. **Differences in Specifications Attributed to Level of Measurement:** The most notable differences include the following:
    - Continuous enrollment requirements for patient/member inclusion (enrolled for health plan and visit made for physician level)
    - Denominator determination of eligible population (and subsequent denominator) sizes

Issues raised by Steering Committee: What is the impact of low cost big retail drug sales ("$4 drugs") outside the pharmacy benefit?

Developer response: A commentary on this issue was published in the *NEJM* by Choudhry & Shrank (2010) and is summarized here:
Questions have arisen regarding the impact of low cost generic drugs on this type of measure, where pharmacies may not submit claims to insurers when patients pay cash. Currently, the general thought is that reporting entities are likely to be impacted (roughly) equally by the prescriptions obtained outside of claims data, although some have taken steps to lessen the impact. Examples of such steps include reducing plan copays for similar types of drugs and providing incentives for pharmacies to share this type of data. Medicare patients also have an incentive to stay inside the plan since cash prescriptions would not count towards their true out of pocket and reduce their ability to get out of the coverage gap. There is limited investigation into this issue with some health plan data, but there is need for more research. This issue poses a potential problem for any measure that includes data on prescriptions filled. As of yet a consistent, comprehensive solution has not been identified.

Issues raised by Steering Committee: Does the measure overly exclude patients who would benefit such as mild asthma or history or asthma? How large are the exclusions? Some beta blockers are "lung sparing".

Developer response:

- The way the measure is constructed, patients that are on beta blockers and that have a diagnosis of asthma are INCLUDED in both the denominator and numerator. Only those that are NOT included in the numerator (that is are NOT on beta blockers) can be excluded from the denominator based on a determination that there are:
  - Contraindications to beta-blocker therapy including asthma
  - Allergic reaction to beta blockers

NCQA will seek input from the Pharmacy Panel on lung sparing BB but at this point, since only patients that are numerator NON compliant are excluded, we would anticipate a small impact if lung sparing beta blockers are removed.

Issues raised by Steering Committee: When are patients excluded in the calculation algorithm?

Developer response: See Above.

- Also exclude from the denominator hospitalizations in which the patient was transferred directly to a non-acute care facility for any diagnosis.
- For health plan implementation, exclusions are generally removed only for those individuals who are not found through data to have received the service required for the numerator.

Developer response: Modifications have been made to the following Measure Submission Form sections: De.2: modified description; corrected age 2a.2: modified numerator time window
2a.3: added codes and medications 2a.5: checked both genders
2a.9: modified exclusion description 2a.10: modified exclusion details
2a.24: checked pharmacy data, electronic clinical data & EHR data
2a.32: checked health plan 1b.4: Included a note to see 1.b.2 for results stratified by product line
2h.1: included a note to see 1b.2 for results stratified by product line
2h.2: added language on disparities

Follow-up issues from the February 15-16, 2011 meeting of the Cardiovascular E&M Steering Committee for measures submitted by AMA-PCPI:

0067 CAD: anti-platelet therapy (PCPI)

Steering Committee issue: How often is the exclusion for "other" used? Is this monitored?
Developer response: The ACCF, AHA, and PCPI methodology uses three categories of reasons for which a patient may be excluded 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 have been provided in the measure exception language of instances that would constitute an exception and are intended to serve as a guide to clinicians. Rather than specifying an exhaustive list of explicit medical, patient, and system reasons for exception for each measure, the ACCF, AHA, and PCPI rely on clinicians to link the exception with a specific reason for the decision to not prescribe the therapy. Where examples of exceptions are included in the measure language, the PCPI has specified these reasons within the measure specifications, however this list is not intended to be an exhaustive list of reasons. Some have indicated concerns with exception reporting --the potential for physicians to inappropriately exclude patients to enhance their performance statistics. Research has indicated that levels of exception reporting occur infrequently and are generally valid. (Doran et al., 2008), (Kmetik et al., 2011) Furthermore, exception reporting has been found to have substantial benefits: "it is precise, it increases acceptance of [pay for performance] programs by physicians, and it ameliorates perverse incentives to refuse care to "difficult" patients." (Doran et al., 2008) A recent study conducted by the PCPI in 47,075 outpatients with coronary artery disease seen during 2006 and 2007 in 5 medical practices that used electronic health records, reported that the overall exception percentage for all 4 measures studied was 3.5%. The vast majority (92.6%) of those exceptions were confirmed during manual review. More specifically, for the antiplatelet therapy measure, 2.0% of patients had an exception reported. Of those exceptions, 99.4% were for medical reasons. Drug allergy was the most frequent medical reason for an exception to antiplatelet therapy (59.7% [CI, 50.0% to 69.5%]), followed by drug interaction (5.8 [CI, 1.2–10.5]) and drug intolerance (5.6 [CI, 0.99–10.1] (Kmetik et al., 2011). Other medical reason exceptions were reported in the study, beyond those provided as examples in the measure language (e.g. end of life issues or liver toxicity).

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. We also advocate for the systematic review and analysis of each physician's exceptions data to identify practice patterns and opportunities for quality improvement.

References:

Doran T, Fullwood C, Reeves D, Gravelle H, Roland M. Exclusion of pay for performance targets by English Physicians. *New Engl J Med.* 2008; 359: 274-84.

Kmetik KS, Otoole MF, Bossley H et al. Exceptions to Outpatient Quality Measures for Coronary Artery Disease in Electronic Health Records. *Ann Intern Med.* 2011;154:227-234.

Steering Committee issue: Disparities
Developer response: A recent analysis of data derived from 14,464 patients enrolled from July 2008

through June 2009 into the American College of Cardiology's PINNACLE program concluded that there were no substantial racial or sex differences in compliance for key performance measures for CAD, HF, and atrial fibrillation (Chan et al, 2010). Compliance rates between black and whites and men and women were generally similar for antiplatelet use for patients with CAD. More specifically, 84.5% of Whites, 89.1% of Blacks, 84.4% of Men and 83.2% of Women with CAD were prescribed antiplatelet therapy.

The ACCF, AHA, and PCPI advocate that performance measure data should, where possible, be stratified by race, ethnicity, and primary language to assess disparities and initiate subsequent quality improvement activities addressing identified disparities, consistent with recent national efforts to standardize the collection of race and ethnicity data. A 2008 NQF report endorsed 45 practices including stratification by the aforementioned variables. A 2009 IOM report "recommends collection of the existing Office of Management and Budget (OMB) race and Hispanic ethnicity categories as well as more fine-grained categories of ethnicity (referred to as granular ethnicity and based on one's ancestry) and language need (a rating of spoken English language proficiency of less than very well and one's preferred language for health-related encounters)."

References:

Chan PS, Oetgen WJ, Buchanan D, et al. Cardiac Performance Measure Compliance in Outpatients, The American College of Cardiology and National Cardiovascular Data Registry's PINNACLE (Practice Innovation And Clinical Excellence) Program, *J. Am. Coll. Cardiol.*

Steering Committee issue: Harmonization with NCQA and MNCM – specifications of CAD within IVD; with NCQA, MNCM, CMS for anti-thrombotic inclusions

Developer response: Upon original development of the measure set in 2003 and as part of the 2009 update, patients with chronic stable coronary artery disease were identified as the denominator for the measure set to be consistent with ACC/AHA clinical practice guidelines for patients with chronic stable angina which served as the primary evidence base to support measure development. The specific ICD-9 codes selected for CAD encompass all of the relevant codes in the 410-414 series, as well as procedure codes for patients who have undergone coronary bypass surgery or percutaneous coronary intervention. The 410-414 series of codes have been previously identified by other sources, including the American Heart Association as part of their yearly statistical reports, as representative of patients with coronary heart disease.

The measure is limited to the only antiplatelet agents (ie, aspirin and clopidogrel) recommended by the guideline, as follows: Aspirin should be started at 75 to 162 mg per day and continued indefinitely in all patients
unless contraindicated (Class I Recommendation, Level A Evidence). Clopidogrel [is recommended] when aspirin is absolutely contraindicated (Class IIa Recommendation; Level of Evidence B).
This represents an update to the previous version of the measure that allowed for aspirin, clopidogrel or a combination of aspirin and extended release dipyridamole and is consistent with changes to the evidence.
The Work Group also included denominator exceptions for the measure so that physicians can exclude patients for whom aspirin or clopidogrel is not appropriate. If the patient has been prescribed another type of antithrombotic for valid reasons, the medical reason exception might apply.

References:

Gibbons RJ, Abrams J, Chatterjee K, Daley J, Deedwania PC, Douglas JS, Ferguson TB Jr., Fihn SD, Fraker TD Jr., Gardin JM, O'Rourke RA, Pasternak RC, Williams SV. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina: a report of the American College of

Cardiology/American Heart guideline update for the management of patients with chronic stable angina: a report of the American College of Cardiology/American Heart Association
Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for the Management of Patients with Chronic Stable Angina). 2002. Available at:
www.acc.org/clinical/guidelines/stable/stable.pdf

Fraker JD, Fihn SD, writing on behalf of the 2002 Chronic Stable Angina Writing Committee. 2007 chronic angina focused update of the ACC/AHA 2002 Guidelines for the Management of Patients with Chronic Stable Angina: a report of the American College of Cardiology/American Heart
Association Task Force on Practice Guidelines Writing Group to Develop the Focused Update of the 2002 Guidelines for the Management of Patients with Chronic Stable Angina. *J Am Coll Cardiol.* 2007;50:2264-2274

0074 CAD: Lipid control (PCPI)
Steering Committee issue: This measure is significantly revised from the original endorsement. What version of the measure was tested in DOQ and cardioHIT, etc? **Developer response:** In both the original and updated versions of the measure, the LDL value needs to be recorded and accessible. In the original version of the measure it was to determine the exception, in the updated version of the measure it is used to determine eligibility at the denominator level. Both the original and updated versions of the measure are met with the prescription of a statin. Therefore, the data elements required to calculate the measure remain the same.
Steering Committee issue: How are patients who have not had an LDL test performed counted in the measure? **Developer response:** All patients aged 18 years and older with a diagnosis of coronary artery disease must have an LDL-C recorded in order to satisfy the measure. The measure specifications will be clarified that patients who have not had an LDL test performed would not meet the measure.
Steering Committee issue: Are patients that are already taking a statin and still have an LDL > 100 counted in the numerator? **Developer response:** Patients with an LDL>=100 are included in the numerator only if there is a plan in place to achieved an LDL of < 100 that should include the prescription of a statin. Patients cannot remain in the numerator if they are only on a statin and there is no plan in place to achieve an LDL <100. The Work Group recognized the issue of giving physicians "credit" for handing a patient a medication and still having LDL levels that exceed guideline-recommended targets. However, this risk is outweighed by the unintended consequences such as the possibility that clinicians would avoid accepting patients with particularly high lipid values. This issue of adverse selection weighed heavily in the discussions and the Work Group felt that clinicians should not be scored lower simply because of their case-mix of patients.
Steering Committee issue: Disparities **Developer response:** A recent analysis of data derived from 14,464 patients enrolled from July 2008 through June 2009 into the American College of Cardiology's PINNACLE program concluded that there were no substantial racial or sex differences in compliance for key performance measures for CAD, HF, and atrial fibrillation (Chan et al., 2010). Compliance rates between black and whites and men and women were generally similar for use of lipid-lowering agents for patients with CAD. More specifically, 84.8% of Whites, 84.0% of Blacks, 85.6% of Men and 81.5% of Women with CAD were prescribed lipid-

lowering drugs.

The ACCF, AHA, and PCPI advocate that performance measure data should, where possible, be stratified by race, ethnicity, and primary language to assess disparities and initiate subsequent quality improvement activities addressing identified disparities, consistent with recent national efforts to standardize the collection of race and ethnicity data. A 2008 NQF report endorsed 45 practices including stratification by the aforementioned variables. A 2009 IOM report "recommends collection of the existing Office of Management and Budget (OMB) race and Hispanic ethnicity categories as well as more fine-grained categories of ethnicity (referred to as granular ethnicity and based on one's ancestry) and language need (a rating of spoken English language proficiency of less than very well and one's preferred language for health-related encounters)."

References:

Chan PS, Oetgen WJ, Buchanan D, et al. Cardiac Performance Measure Compliance in Outpatients, The American College of Cardiology and National Cardiovascular Data Registry's PINNACLE (Practice Innovation And Clinical Excellence) Program, *J. Am. Coll. Cardiol.* 2010;56;8-14.

National Quality Forum Issue Brief (No.10). Closing the Disparities Gap in Healthcare Quality with Performance Measurement and Public Reporting. Washington, DC: NQF, August 2008.

Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement. March 2010. AHRQ
Publication No. 10-0058-EF. Agency for Healthcare Research and Quality, Rockville, MD. Available at: http://www.ahrq.gov/research/iomracereport. Accessed May 25, 2010.

Steering Committee issue: Harmonization with PCPI and MNCM– specifications of CAD within the IVD;
Developer response: Upon original development of the measure set in 2003 and as part of the 2009 update, patients with chronic stable coronary artery disease were identified as the denominator for the measure set to be consistent with ACC/AHA clinical practice guidelines for patients with chronic stable angina which served as the primary evidence base to support measure development. The specific ICD-9 codes selected for CAD encompass all of the relevant codes in the 410-414 series, as well as procedure codes to identify patients who have undergone coronary bypass surgery or percutaneous coronary intervention. The 410-414 series of codes have been previously identified by other sources, including the American Heart Association as part of their yearly statistical reports, as representative of patients with coronary heart disease.

0066 CAD: ACE/ARB therapy (PCPI)

Steering Committee issue: Why are patients with CAD + HTN and CAD + CKD not included? These are also indications for ACE/ARBs.
Developer response: Whereas the guidelines on which these measures are based list CAD with heart failure or diabetes as specific indications for ACEI, they do not explicitly recommend ARB for patients with HTN or CKD. Because this measure combines ACEI and ARB therapy, including HTN or CKD in the denominator would be problematic with respect to the underlying guideline support for the measure.

Steering Committee issue: Would "most recent LVEF" be more appropriate than "prior LVEF"?
Developer response: Given that ACEIs and ARBs can often result in improved or even normalized ventricular
function, the Work Group agreed that a current or prior LVEF < 40% qualifies for new or continued treatment with

an ACEI or ARB. At the same time, the Work Group included denominator exceptions for the measure so that physicians can exclude patients for whom ACE inhibitor or ARB therapy is not appropriate. These exceptions provide a means for physicians to document clinical judgment on a case-by-case basis. If a patient has not been prescribed ACE inhibitor or ARB therapy because it is not indicated, the medical reason would apply. Further, current guidelines for the care of patients with HF do not specifically address when pharmacological therapy should be discontinued in cases where LVEF recovers.

Steering Committee issue: Have you considered measuring adherence rather than a single prescription?
Developer response: In the current environment, reliable links between health care records and pharmacy data
are still often unavailable and measures based on prescription fill data therefore have limited feasibility. As EHR adoption becomes more widespread and access to prescription fill data becomes more generally available, the collection of other information such as whether or not patients fill their prescriptions will also become more reliable. Even the quality of claims data from pharmacy benefits managers (PBMs) is deteriorating with the advent of $4 generic medications that are not paid for by PBMs. The measure construction reflects data collection capabilities at the present time and are focused on those aspects of care that are most actionable by the provider.

An important objection to the use of patient adherence as a measure of physician quality is that many other factors impact patient reasons to fill medications. Some include, but are not limited to health insurance pharmacy benefit designs, including formularies and co-pays. (Chernew et al., 2008) Further, penalizing practitioners for patients' adherence is likely to promote adverse selection, where physicians are reluctant to provide care for patients who are non-adherent.
At the physician level, until data systems are updated, health plan measures may better capture prescription fills rates based on various economic incentives and disincentives.
<u>Reference:</u>
Chernew ME, Shah MR, Wegh A, et al. Impact of decreasing copayments on medication adherence within a disease management environment. Health Aff (Millwood). 2008;27:103-12.

Steering Committee issue: Disparities
Developer response: A recent analysis of data derived from 14,464 patients enrolled from July 2008 through June 2009 into the American College of Cardiology's PINNACLE program concluded that there were no substantial racial or sex differences in compliance for key performance measures for CAD, HF, and atrial fibrillation (Chan et al., 2010). Compliance rates between black and whites and men and women were generally similar for use of ACEI or ARBs for patients with CAD and either diabetes or LVEF < 40. More specifically, 72.5% of Whites, 79.3% of Blacks, 72.1% of Men and 71.7% of Women with CAD and diabetes or LVEF<40 were prescribed ACEIs or ARBS.

The ACCF, AHA, and PCPI advocate that performance measure data should, where possible, be stratified by race, ethnicity, and primary language to assess disparities and initiate subsequent quality improvement activities addressing identified disparities, consistent with recent national efforts to standardize the collection of race and ethnicity data. A 2008 NQF report endorsed 45 practices including stratification by the aforementioned variables. A 2009 IOM report "recommends collection of the existing Office of Management and Budget (OMB) race and Hispanic ethnicity categories as well as more fine-grained categories of ethnicity (referred to as granular ethnicity and based on one's ancestry) and language need (a rating of spoken English language proficiency of less than very well and one's preferred language for health-related encounters)."

<u>References:</u>
Chan PS, Oetgen WJ, Buchanan D, et al. Cardiac Performance Measure Compliance in Outpatients, The

American College of Cardiology and National Cardiovascular Data Registry's PINNACLE (Practice Innovation And Clinical Excellence) Program, *J. Am. Coll. Cardiol.* 2010;56;8-14.

National Quality Forum Issue Brief (No.10). Closing the Disparities Gap in Healthcare Quality with Performance Measurement and Public Reporting. Washington, DC: NQF, August 2008.

Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement. March 2010. AHRQ
Publication No. 10-0058-EF. Agency for Healthcare Research and Quality, Rockville, MD. Available at: http://www.ahrq.gov/research/iomracereport. Accessed May 25, 2010.

Steering Committee issue: Harmonization with PCPI and MNCM– specifications of CAD within the IVD;
Developer response: Upon original development of the measure set in 2003 and as part of the 2009 update, patients with chronic stable coronary artery disease were identified as the denominator for the measure set to be consistent with ACC/AHA clinical practice guidelines for patients with chronic stable angina which served as the primary evidence base to support measure development. The specific ICD-9 codes selected for CAD encompass all of the relevant codes in the 410-414 series, as well as procedure codes to identify patients who have undergone coronary bypass surgery or percutaneous coronary intervention. The 410-414 series of codes have been previously identified by other sources, including the American Heart Association as part of their yearly statistical reports, as representative of patients with coronary heart disease.

Steering Committee issue: Harmonization with CMS 0137– ACE/ARBS at discharge after AMI
Developer response: Apart from the different denominator populations and care setting, this measure is aligned with the CMS measure to the extent possible. There are considerable differences between patients with AMI and those with chronic, stable CAD which would logically lead to some differences in performance measures, especially with respect to exceptions.

0070 CAD – CAD: beta blocker – prior MI (PCPI)

Steering Committee issue: What is the evidence beyond 3 years post MI?
Developer response: The newly released AHA guidelines for the prevention of cardiovascular disease in women do note that "Beta-blockers should be used for up to 12 mo (Class I; Level of Evidence A) or up to 3 y (Class I; Level of Evidence B) in all women after MI or ACS with normal left ventricular function unless contraindicated." As a result of this change to the evidence base, the Work Group will be consulted and any necessary modifications will be made to the measure.
Reference:
Effectiveness-Based Guidelines for the Prevention of Cardiovascular Disease in Women--2011 Update: A Guideline From the American Heart Association. Executive Writing Committee, Mosca L, Benjamin EJ, Berra K, Bezanson JL, Dolor RJ, Lloyd-Jones DM, Newby LK, Piña IL, Roger VL, Shaw LJ, Zhao D, Beckie TM, Bushnell C, D'Armiento J, Kris-Etherton PM, Fang J, Ganiats TG, Gomes AS, Gracia CR, Haan CK, Jackson EA, Judelson DR, Kelepouris E, Lavie CJ, Moore A, Nussmeier NA, Ofili E, Oparil S, Ouyang P, Pinn VW, Sherif K, Smith SC Jr, Sopko G, Chandra-Strobos N, Urbina EM, Vaccarino V, Wenger NK.

Steering Committee issue: May need revision for consistency with recent guidelines.
Developer response: The Work Group acknowledges that several clinical practice guidelines on which these measures are largely based are in evolution. We are prepared to incorporate the evidence from new guidelines as soon as they are available. However, it remains ACCF, AHA and PCPI performance measures policy that measures should not be developed before the supporting guidelines have been published.

Steering Committee issue: Disparities

Developer response: A recent analysis of data derived from 14,464 patients enrolled from July 2008 through June 2009 into the American College of Cardiology's PINNACLE program concluded that there were no substantial racial or sex differences in compliance for key performance measures for the CAD, HF, and atrial fibrillation (Chan et al., 2010). Compliance rates between blacks and whites and men and women were generally similar for use of beta-blockers for patients with CAD and who also have prior MI or LVEF <40%. More specifically, 86.0% of Whites, 89.5% of Blacks, 86.4% of Men and 85.6% of Women with CAD and who also have prior MI or LVEF <40% were prescribed beta-blockers.

The ACCF, AHA, and PCPI advocate that performance measure data should, where possible, be stratified by race, ethnicity, and primary language to assess disparities and initiate subsequent quality improvement activities addressing identified disparities, consistent with recent national efforts to standardize the collection of race and ethnicity data. A 2008 NQF report endorsed 45 practices including stratification by the aforementioned variables. A 2009 IOM report "recommends collection of the existing Office of Management and Budget (OMB) race and Hispanic ethnicity categories as well as more fine-grained categories of ethnicity (referred to as granular ethnicity and based on one's ancestry) and language need (a rating of spoken English language proficiency of less than very well and one's preferred language for health-related encounters)."

References:

Chan PS, Oetgen WJ, Buchanan D, et al. Cardiac Performance Measure Compliance in Outpatients, The American College of Cardiology and National Cardiovascular Data Registry's PINNACLE (Practice Innovation And Clinical Excellence) Program, *J. Am. Coll. Cardiol.* 2010;56;8-14.

National Quality Forum Issue Brief (No.10). Closing the Disparities Gap in Healthcare Quality with Performance Measurement and Public Reporting. Washington, DC: NQF, August 2008.

Race, Ethnicity, and Language Data: Standardization for Health Care Quality Improvement. March 2010. AHRQ
Publication No. 10-0058-EF. Agency for Healthcare Research and Quality, Rockville, MD. Available at: http://www.ahrq.gov/research/iomracereport. Accessed May 25, 2010.

Steering Committee issue: Harmonization – NCQA (0071) and CMS (0160)

Developer response: Upon original development of the measure set in 2003 and as part of the 2009 update, patients with chronic stable coronary artery disease were identified as the denominator for the measure set to be consistent with ACC/AHA clinical practice guidelines for patients with chronic stable angina which served as the primary evidence base to support measure development. The specific ICD-9 codes selected for CAD encompass all of the relevant codes in the 410-414 series, as well as procedure codes to identify patients who have undergone coronary bypass surgery or percutaneous coronary intervention. The 410-414 series of codes have been previously identified by other sources, including the American Heart Association as part of their yearly statistical reports, as representative of patients with coronary heart disease.

Follow-up issues from the February 15-16, 2011 meeting of the Cardiovascular E&M Steering Committee for measures submitted by Minnesota Community Measurement:

0076 optimal vascular care (MNCM)
Steering Committee issue: The Committee acknowledges there are too many conflicting guidelines for BP targets and recommends that NQF select a single national guideline to align all measures. The Committee suggests aligning to JNC8 (due January 2012). Would MNCM agree to align measures to JNC8 going forward? **Developer response:** Yes, MN Community Measurement agrees to align measures to JNC8 going forward. We took the Cardiovascular E&M Steering Committee's recommendation to modify the blood pressure target to <140/90 to our Measurement and Reporting Committee on March 9 and they approved this change. This modification is supported by the 2009 European Hypertension update (cited during the February 15 call) as well as ICSI Guidelines on Hypertension Diagnosis and Treatment released in November 2010.
Steering Committee issue: Harmonization with NCQA #0073, 0068, 0075 – IVD specifications; age inclusions; align BP target at <140/90 **Developer response:** Our age criteria is 18-75 and is consistent with ICSI guidelines. Having an upper age limit for this and other CV measures avoids safety concerns about aggressive treatment in the elderly raised by the CV Steering Committee. -With the BP target change noted above, we are now aligned with NCQA's cardiovascular measures.
Steering Committee issue: Disparities data **Developer response:** Clinic level Optimal Vascular Care results have been recently stratified in our 2010 Health Care Disparities Report by patients enrolled in state/federally funded Minnesota Health Care Programs (MHCP), and these results are compared with patients enrolled in commercial private and/or Medicare programs (see pages 26-30; 148). These comparisons are made at a statewide level and by clinic site for the Optimal Vascular Care measure. A draft copy of this report is available on our corporate website at http://www.mncm.org/site/?page=resources . [Scroll down to the bottom of the page and insert the following password: mncmdisparitiesdraft]. Stratification by payer type can serve as a proxy for socioeconomic status. Analyses demonstrated that there is a gap in performance for patients with MHCP versus other payers. The statewide MHCP rate for Optimal Vascular Care is 21 percent; the rate for patients enrolled with other payers is 35% percent. This is a statistically significant difference (t-test with a p-value of < 0.05). Patients enrolled with other payers have higher rates of optimal vascular care than patients enrolled in MHCP. Results for Optimal Vascular Care are not yet stratified by race within this report but we plan to report these rates at to do this in future years. MNCM has developed a document titled "Handbook on the Collection of Race/Ethnicity/Language Data in Medical Groups" that established a minimum dataset for collection and reporting to MNCM. In 2011, MNCM began requiring clinics to include race, ethnicity and language data elements along with the clinical data elements for the Optimal Vascular Care measure. By the end of 2011, we will develop a plan to stratify Optimal Vascular Care results by race, ethnicity and language.

Follow-up issues from the February 15-16, 2011 meeting of the Cardiovascular E&M Steering Committee for measures submitted by CMS:

0289 Median time to ECG
Steering Committee issue: The title and description do not accurately describe what is being measured. Explanation from the developer needed for the Committee to understand the intent of the measure. **Developer response:** **Measure Name:** Median Time to ECG **Description:** Median Time form 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). Response: Intent is to capture the median time to ECG performance in AMI or Chest Pain patients who present to the ED and are transferred out to another facility.
Steering Committee issue: What is the evidence for patients other than STEMI needing urgent evaluation? **Developer response:** Current guidelines from the ACCF/AHA for STEMI note that ECG should be completed within 10 minutes for patients with persistent chest pain. You cannot diagnosis a STEMI until the ECG is completed. Here are the Class I recommendations: A 12-lead ECG should be performed and shown to an experienced emergency physician within 10 min of emergency department arrival for all patients with chest discomfort (or anginal equivalent) or other symptoms suggestive of STEMI (Level of Evidence: C). A 12-lead ECG should be obtained immediately (within 10 min) in patients with ongoing chest discomfort and as rapidly as possible in patients who have a history of chest discomfort consistent with acute coronary syndrome but whose discomfort has resolved by the time of evaluation (Level of Evidence: C).
Steering Committee issue: Where is Appendix A OP Table 1.1 referred to in the submission? **Developer response:** Appendix A 1.1 (Acute Myocardial Infarction Diagnosis Codes) is found within the previously submitted documents. The table includes 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
Steering Committee issue: No Disparities information **Developer response:** see CMS disparities spreadsheet s

0132 Aspirin on arrival for AMI (CMS)
Steering Committee issue: Does taking a daily low-dose aspirin 8 hours before the ED/hospital arrival for AMI count in the numerator? **Developer response:** Yes, patients with documentation in the record of receiving aspirin (any dosage) within 24 hours prior to arrival are included in the numerator.
Steering Committee issue: What is the aspirin dose and timeframe required to meet the measure? **Developer response:** Aspirin (any dosage) within 24 hours prior to arrival or 24 hours after arrival.
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0286 Aspirin on arrival (CMS)
Steering Committee issue: The title and description do not accurately describe what is being measured. Significant explanation from the developer was needed for the Committee to understand the intent of the measure. Using the same name for measures 0132 and 0286 is confusing to audiences and some may assume they are redundant or competing measures **Developer response:** This measure includes both AMI and Chest Pain patients with probable cardiac chest pain. The population is emergency department patients who are transferred out to another facility and subsequently are not captured through measure 0132. This population differs from 0132 as patients with Suspected Cardiac Chest Pain are also included in the measure.
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0163 PCI within 90 minutes (CMS)
Steering Committee issue: How often is the exclusion for "system reason for delay" used? Given the potential for gaming, is this being monitored? **Developer response:** Current overall trends in measure numerator and denominator counts do not suggest gaming. There is no increasing trend in the use of this reason data element. In our last analysis, Reason for Delay in PCI was occurring in only .9% of cases (1Q10). Nevertheless, Yes, this is being monitored..
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0164 Fibrinolysis within 30 minutes (CMS)
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0288 Fibrinolysis within 30 minutes (CMS) **0287 Median time to fibrinolysis (CMS)**
Steering Committee issue: The title and description do not accurately describe what is being measured. Significant explanation from the developer was needed for the Committee to understand the intent of the measure and to distinguish it from measure 0164. **Developer response:** **288 Measure Name**: Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival **Description**: Emergency Department acute myocardial infarction (AMI) patients receiving fibrinolytic therapy during the ED stay and having a time from ED arrival to fibrinolysis of 30 minutes or less. **287 Measure Name**: Median Time to Fibrinolysis **Description**: Median Time from emergency department arrival to administration of fibrinolytic therapy in ED patients with ST-segment elevation or left bundle branch block (LBBB) on the electrocardiaogram (ECG) performed closest to ED arrival and prior to transfer. Response: Measures are the same specifications except 0288 and 0287 capture patients who are seen in the emergency department and are subsequently transferred out to another facility and thus are not captured by measure 0164.
Steering Committee issue: The Committee concluded that these are the same measure with different representation of the results rather than competing measures and should be listed under the same NQF number. **Developer response:** Measures are the same specifications except 0288 and 0287 capture patients who are seen in the emergency department and are subsequently transferred out to another facility and thus are not captured by measure 0164.
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0290 Median time to transfer to another facility (CMS)
Steering Committee issue: The measure needs a better title and description of what is being measured. **Developer response:** **Measure Name**: Median Time to Transfer to Another Facility for Acute Coronary Intervention **Description**: Median time from emergency department arrival to time of transfer to another facility for acute coronary intervention
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

0137 ACEI/ARB at discharge for AMI (CMS)
Steering Committee issue: There are a large number of exclusions due to lack of assessment of LVEF. Is this a quality problem? **Developer response:** Uncertain. The ACC/AHA STEMI/NSTEMI Performance Measure set includes an LVSF Evaluation specific to AMI patients. The Heart Care team has recommended addition of such a measure. Issue is currently under discussion at CMS.
Steering Committee issue: No Disparities data **Developer response:** see CMS disparities spreadsheet s

Disparities for ED-AMI performance measures during CY 2009

	OP-1: Median Time to Fibrinolysis				OP-2: Fibrinolytic Therapy Received Within 30 Minutes of ED Arrival				
Race/Ethnicity*	**N**	**Median**	**Average**	**Wilcoxon p-value**	**Num**	**Den**	**Percent**	**Unadjusted OR (95% CI)**	**p-value**
Caucasian	5,032	29.00	36.48	reference	2,783	5,045	55.16	reference	N/A
African-American	343	31.00	46.60	<0.001	169	345	48.99	0.78 (0.63-0.97)	0.0260
Hispanic	265	33.00	48.36	<0.001	122	268	45.52	0.68 (0.53-0.87)	0.0020
Asian/Pacific Islander	89	28.00	36.18	0.4095	50	90	55.56	1.02 (0.67-1.55)	0.9410
Native American	46	30.00	37.67	0.5053	23	46	50.00	0.81 (0.45-1.45)	0.4840
Age Group									
< 65	4,077	29.00	36.53	reference	2,299	4,088	56.24	reference	N/A
65 - 74	1,220	30.00	38.27	<0.001	649	1,225	52.98	0.88 (0.77-1.00)	0.0440
75 - 84	608	32.00	41.80	<0.001	290	612	47.39	0.70 (0.59-0.83)	<0.001
≥ 85	155	40.00	48.92	<0.001	57	155	36.77	0.45 (0.32-0.63)	<0.001
US Region									
South	2,950	30.00	38.20	<0.001	1,603	2,957	54.21	0.85 (0.74-0.99)	0.0320
Midwest	1,067	30.00	36.72	0.0013	571	1,070	53.36	0.82 (0.69-0.98)	0.0300
Northeast	975	28.00	33.96	reference	568	977	58.14	reference	N/A
West	1,068	30.00	40.84	<0.001	553	1,076	51.39	0.76 (0.64-0.91)	0.0020
Gender*									
Female	1,598	32.00	42.18	<0.001	755	1,603	47.10	1.5 (1.3-1.7)	<0.001
Male	4,461	28.00	36.13	<0.001	2,539	4,476	56.72	1.5 (1.3-1.7)	<0.001
Urban Status*									
Rural	4,333	30.00	37.28	0.3820	2,322	4,348	53.40	1.1 (1.0-1.2)	0.0520
Urban	1,726	29.00	38.83	0.3820	972	1,731	56.15	1.1 (1.0-1.2)	0.0520

*We excluded from analyses those with missing values for the demographic variable under review

	OP-3: Median Time to Transfer to Another Facility for Acute Coronary Intervention (Median Time to Transfer)					OP-4: Aspirin at Arrival				
Race/Ethnicity*	**N**	**Median**	**Average**	**Wilcoxon p-value**		**Num**	**Den**	**Percent**	**Unadjusted OR (95% CI)**	**p-value**
Caucasian	13,077	65.00	218.60	reference		117,057	123,251	94.97	reference	N/A
African-American	1,080	75.00	276.80	<0.001		12,493	13,482	92.66	0.67 (0.62-0.72)	<0.001
Hispanic	600	85.00	252.70	<0.001		5,663	6,045	93.68	0.78 (0.71-0.87)	<0.001
Asian/Pacific Islander	216	75.00	125.87	0.0035		1,476	1,543	95.66	1.17 (0.91-1.49)	0.2220
Native American	55	89.00	162.82	0.0310		864	944	91.53	0.57 (0.45-0.72)	<0.001
Age Group										
< 65	9,290	62.00	160.72	reference		85,580	90,432	94.63	reference	N/A
65 - 74	3,249	70.00	403.31	<0.001		29,932	31,468	95.12	1.10 (1.04-1.17)	<0.001
75 - 84	2,316	80.00	235.63	<0.001		20,976	22,187	94.54	0.98 (0.92-1.05)	0.5830
≥ 85	911	86.00	138.80	<0.001		6,756	7,234	93.39	0.80 (0.73-0.88)	<0.001
US Region										
South	5,795	70.00	322.12	0.0990		61,421	65,417	93.89	0.68 (0.63-0.73)	<0.001
Midwest	4,541	60.00	156.03	<0.001		40,466	42,702	94.76	0.80 (0.74-0.87)	<0.001
Northeast	3,497	72.00	147.88	reference		20,055	20,945	95.75	reference	N/A
West	1,933	71.00	198.30	0.2903		21,302	22,257	95.71	0.99 (0.90-1.09)	0.8320
Gender*										
Female	5,065	76.00	248.14	<0.001		56,041	59,826	93.67	1.4 (1.3-1.4)	<0.001
Male	10,701	63.00	207.34	<0.001		87,185	91,477	95.31	1.4 (1.3-1.4)	<0.001
Urban Status*										
Rural	5,731	78.00	216.81	<0.001		71,272	75,340	94.60	1.0 (1.0-1.1)	0.3060
Urban	10,032	62.00	222.54	<0.001		71,901	75,910	94.72	1.0 (1.0-1.1)	0.3060
*We excluded from analyses tho										

		OP-5: Median Time to ECG			
Race/Ethnicity*		**N**	**Median**	**Average**	**Wilcoxon p-value**
Caucasian		127,892	8.00	23,530.89	reference
African-American		13,997	11.00	11,966.34	<0.001
Hispanic		6,250	11.00	205.28	<0.001
Asian/Pacific Islander		1,606	9.00	136.37	0.0623
Native American		974	11.00	38.42	<0.001
Age Group					
< 65		93,119	9.00	15,532.37	reference
65 - 74		32,831	9.00	67,136.36	0.0665
75 - 84		23,373	9.00	155.40	<0.001
≥ 85		7,653	10.00	6,679.42	<0.001
US Region					
South		67,889	9.00	41,816.05	0.1285
Midwest		44,300	8.00	15,862.13	<0.001
Northeast		21,588	9.00	5,181.47	reference
West		23,199	9.00	2,235.55	0.7147
Gender*					
Female		62,895	10.00	2,623.73	<0.001
Male		94,063	8.00	37,636.93	<0.001
Urban Status*					
Rural		78,256	9.00	41,797.78	<0.001
Urban		78,646	9.00	5,522.65	<0.001
***We excluded from analyses tho**					

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
AMI1: Aspirin at arrival					
Caucasian	247,145	251,158	98.4	ref.	ref.
African-American	36,868	37,747	97.7	0.68 (0.63-0.73)	<0.001
Hispanic	26,561	27,316	97.2	0.57 (0.53-0.62)	<0.001
Asian/Pacific Islander	7,346	7,472	98.3	0.95 (0.79-1.13)	0.548
Native American	1,074	1,087	98.8	1.34 (0.78-2.32)	0.293
AMI2: Aspirin at discharge					
Caucasian	305,754	310,489	98.5	ref.	ref.
African-American	39,545	40,591	97.4	0.59 (0.55-0.63)	<0.001
Hispanic	27,791	28,805	96.5	0.42 (0.40-0.45)	<0.001
Asian/Pacific Islander	7,694	7,854	98.0	0.74 (0.64-0.87)	<0.001
Native American	1,908	1,935	98.6	1.09 (0.75-1.60)	0.643
AMI3: ACEI or ARB for LVSD					
Caucasian	54,767	57,482	95.3	ref.	ref.
African-American	8,642	9,024	95.8	1.12 (1.01-1.25)	0.040
Hispanic	5,591	5,896	94.8	0.91 (0.80-1.03)	0.123
Asian/Pacific Islander	1,302	1,372	94.9	0.92 (0.72-1.18)	0.514
Native American	371	393	94.4	0.84 (0.54-1.29)	0.416
AMI4: Smoking cessation counseling					
Caucasian	103,977	104,611	99.4	ref.	ref.
African-American	16,611	16,741	99.2	0.78 (0.64-0.94)	0.010
Hispanic	7,671	7,757	98.9	0.54 (0.43-0.68)	<0.001
Asian/Pacific Islander	1,720	1,747	98.5	0.39 (0.26-0.57)	<0.001
Native American	753	767	98.2	0.33 (0.19-0.56)	<0.001
AMI5: Beta-blocker at discharge					
Caucasian	298,954	304,013	98.3	ref.	ref.
African-American	39,112	40,008	97.8	0.74 (0.69-0.79)	<0.001
Hispanic	27,331	28,382	96.3	0.44 (0.41-0.47)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
Asian/Pacific Islander	7,602	7,738	98.2	0.95 (0.80-1.12)	0.526
Native American	1,841	1,882	97.8	0.76 (0.56-1.04)	0.083
AMI7a: Fibrinolytic within 30 minutes					
Caucasian	651	1,169	55.7	ref.	ref.
African-American	73	157	46.5	0.69 (0.50-0.97)	0.030
Hispanic	190	417	45.6	0.67 (0.53-0.83)	<0.001
Asian/Pacific Islander	36	61	59.0	1.15 (0.68-1.93)	0.610
Native American	1	3	33.3	0.40 (0.04-4.40)	0.452
AMI8a: PCI within 90 minutes					
Caucasian	38,044	43,171	88.1	ref.	ref.
African-American	3,448	4,234	81.4	0.59 (0.54-0.64)	<0.001
Hispanic	3,297	3,936	83.8	0.70 (0.64-0.76)	<0.001
Asian/Pacific Islander	1,079	1,237	87.2	0.92 (0.78-1.09)	0.337
Native American	160	189	84.7	0.74 (0.50-1.11)	0.143
HF1: Discharge instructions					
Caucasian	357,746	414,742	86.3	ref.	ref.
African-American	124,070	143,689	86.3	1.01 (0.99-1.03)	0.400
Hispanic	44,786	51,690	86.6	1.03 (1.01-1.06)	0.016
Asian/Pacific Islander	9,895	11,375	87.0	1.07 (1.01-1.13)	0.025
Native American	2,351	3,083	76.3	0.51 (0.47-0.56)	<0.001
HF2: Evaluation of LV function					
Caucasian	521,142	535,940	97.2	ref.	ref.
African-American	159,661	163,219	97.8	1.27 (1.23-1.32)	<0.001
Hispanic	55,388	57,714	96.0	0.68 (0.65-0.71)	<0.001
Asian/Pacific Islander	12,720	13,004	97.8	1.27 (1.13-1.43)	<0.001
Native American	3,201	3,416	93.7	0.42 (0.37-0.49)	<0.001
HF3: ACEI or ARB for LVSD					
Caucasian	145,067	155,808	93.1	ref.	ref.

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
African-American	66,217	69,597	95.1	1.45 (1.39-1.51)	<0.001
Hispanic	18,769	20,068	93.5	1.07 (1.01-1.14)	0.026
Asian/Pacific Islander	3,777	3,962	95.3	1.51 (1.30-1.75)	<0.001
Native American	1,173	1,278	91.8	0.83 (0.68-1.01)	0.064
HF4: Smoking cessation counseling					
Caucasian	76,177	77,858	97.8	ref.	ref.
African-American	44,071	44,760	98.5	1.41 (1.29-1.54)	<0.001
Hispanic	7,273	7,423	98.0	1.07 (0.90-1.27)	0.432
Asian/Pacific Islander	1,375	1,413	97.3	0.80 (0.58-1.11)	0.176
Native American	692	732	94.5	0.38 (0.28-0.53)	<0.001
PN2: Pnemococal vaccination given or screened for					
Caucasian	378,259	408,034	92.7	ref.	ref.
African-American	34,705	39,186	88.6	0.61 (0.59-0.63)	<0.001
Hispanic	24,135	28,528	84.6	0.43 (0.42-0.45)	<0.001
Asian/Pacific Islander	8,804	9,900	88.9	0.63 (0.59-0.67)	<0.001
Native American	2,310	2,640	87.5	0.55 (0.49-0.62)	<0.001
PN3a: Initial blood culture within 24 hours - ICU only					
Caucasian	78,108	82,387	94.8	ref.	ref.
African-American	12,551	13,078	96.0	1.30 (1.19-1.43)	<0.001
Hispanic	7,338	7,863	93.3	0.77 (0.70-0.84)	<0.001
Asian/Pacific Islander	2,199	2,271	96.8	1.67 (1.32-2.12)	<0.001
Native American	776	846	91.7	0.61 (0.47-0.78)	<0.001
PN3b: Initial blood culture before first antibiotic dose - ED only					
Caucasian	361,802	380,083	95.2	ref.	ref.
African-American	56,541	60,416	93.6	0.74 (0.71-0.76)	<0.001
Hispanic	34,169	37,132	92.0	0.58 (0.56-0.61)	<0.001
Asian/Pacific Islander	9,388	9,889	94.9	0.95 (0.86-1.04)	0.240
Native American	3,058	3,402	89.9	0.45 (0.40-0.50)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
PN4: Smoking cessation counseling					
Caucasian	153,759	158,876	96.8	ref.	ref.
African-American	30,859	31,710	97.3	1.21 (1.12-1.30)	<0.001
Hispanic	9,885	10,230	96.6	0.95 (0.85-1.07)	0.400
Asian/Pacific Islander	1,689	1,759	96.0	0.80 (0.63-1.02)	0.074
Native American	1,722	1,940	88.8	0.26 (0.23-0.30)	<0.001
PN5c: First antibiotic dose within 6 hours					
Caucasian	402,180	421,893	95.3	ref.	ref.
African-American	60,989	66,036	92.4	0.59 (0.57-0.61)	<0.001
Hispanic	35,145	39,094	89.9	0.44 (0.42-0.45)	<0.001
Asian/Pacific Islander	9,399	9,865	95.3	0.99 (0.90-1.09)	0.812
Native American	3,430	3,752	91.4	0.52 (0.47-0.59)	<0.001
PN6: Antibioti selection consistent with guidelines					
Caucasian	254,116	279,291	91.0	ref.	ref.
African-American	35,023	38,201	91.7	1.09 (1.05-1.13)	<0.001
Hispanic	25,350	28,361	89.4	0.83 (0.80-0.87)	<0.001
Asian/Pacific Islander	6,093	6,689	91.1	1.01 (0.93-1.10)	0.770
Native American	2,570	2,922	88.0	0.72 (0.65-0.81)	<0.001
PN7: Influenza vaccination given or screened for					
Caucasian	266,920	293,208	91.0	ref.	ref.
African-American	31,910	37,007	86.2	0.62 (0.60-0.64)	<0.001
Hispanic	18,854	22,505	83.8	0.51 (0.49-0.53)	<0.001
Asian/Pacific Islander	5,702	6,539	87.2	0.67 (0.62-0.72)	<0.001
Native American	1,927	2,405	80.1	0.40 (0.36-0.44)	<0.001
SCIP1: Antibiotic within 1 hour before incision or 2 hours for vancomycin or quinolone					
Caucasian	827,536	860,067	96.2	ref.	ref.
African-American	95,484	99,527	95.9	0.93 (0.90-0.96)	<0.001
Hispanic	60,439	64,806	93.3	0.54 (0.53-0.56)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
Asian/Pacific Islander	14,743	15,282	96.5	1.08 (0.99-1.17)	0.101
Native American	4,037	4,325	93.3	0.55 (0.49-0.62)	<0.001
SCIP2: Prophylactic antibiotic consistent with guidelines					
Caucasian	848,411	868,974	97.6	ref.	ref.
African-American	97,576	100,464	97.1	0.82 (0.79-0.85)	<0.001
Hispanic	62,778	64,991	96.6	0.69 (0.66-0.72)	<0.001
Asian/Pacific Islander	15,171	15,547	97.6	0.98 (0.88-1.08)	0.672
Native American	4,230	4,360	97.0	0.79 (0.66-0.94)	0.008
SCIP3: Prophylactic ABX discontinued within 24 h. of surgery end time or 48 h. for cardiac surgery					
Caucasian	766,551	819,715	93.5	ref.	ref.
African-American	87,315	94,468	92.4	0.85 (0.83-0.87)	<0.001
Hispanic	54,461	61,420	88.7	0.54 (0.53-0.56)	<0.001
Asian/Pacific Islander	13,218	14,358	92.1	0.80 (0.76-0.85)	<0.001
Native American	3,812	4,103	92.9	0.91 (0.81-1.02)	0.116
SCIP4: Controlled 6 AM postoperative serum glucose - cardiac surgery					
Caucasian	134,822	144,908	93.0	ref.	ref.
African-American	10,742	11,722	91.6	0.82 (0.77-0.88)	<0.001
Hispanic	11,031	12,520	88.1	0.55 (0.52-0.59)	<0.001
Asian/Pacific Islander	3,437	3,773	91.1	0.77 (0.68-0.86)	<0.001
Native American	706	766	92.2	0.88 (0.68-1.15)	0.344
SCIP6: appropriate hair removal					
Caucasian	1,222,603	1,232,305	99.2	ref.	ref.
African-American	149,984	151,395	99.1	0.84 (0.80-0.89)	<0.001
Hispanic	95,326	97,273	98.0	0.39 (0.37-0.41)	<0.001
Asian/Pacific Islander	23,368	23,575	99.1	0.90 (0.78-1.03)	0.119
Native American	6,390	6,543	97.7	0.33 (0.28-0.39)	<0.001
SCIPCARD2: Perioperative period beta blocker					
Caucasian	327,860	359,462	91.2	ref.	ref.

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Race/Ethnicity (3% of cases were excluded due to missing data on race/ethnicity)

Measures and Race/ethnicity group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
African-American	34,505	38,004	90.8	0.95 (0.92-0.99)	0.007
Hispanic	17,805	20,128	88.5	0.74 (0.71-0.77)	<0.001
Asian/Pacific Islander	5,128	5,770	88.9	0.77 (0.71-0.84)	<0.001
Native American	1,312	1,493	87.9	0.70 (0.60-0.82)	<0.001
SCIPVTE1: Recommended VTE prophylaxis ordered during admission					
Caucasian	343,547	367,129	93.6	ref.	ref.
African-American	49,075	52,658	93.2	0.94 (0.91-0.98)	<0.001
Hispanic	27,199	30,224	90.0	0.62 (0.59-0.64)	<0.001
Asian/Pacific Islander	7,406	8,195	90.4	0.64 (0.60-0.69)	<0.001
Native American	1,999	2,208	90.5	0.66 (0.57-0.76)	<0.001
SCIPVTE2: Received VTE prophylaxis within 24 hours prior to or after surgery					
Caucasian	334,443	365,471	91.5	ref.	ref.
African-American	47,804	52,220	91.5	1.00 (0.97-1.04)	0.798
Hispanic	26,376	29,811	88.5	0.71 (0.69-0.74)	<0.001
Asian/Pacific Islander	7,241	8,126	89.1	0.76 (0.71-0.81)	<0.001
Native American	1,942	2,183	89.0	0.75 (0.65-0.86)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Gender (less than 0.1% of cases were excluded due to missing data on gender)

Measures and gender	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
AMI1: Aspirin at arrival					
Female	132,222	135,450	97.6	ref.	ref.
Male	197,136	199,829	98.7	1.79 (1.70-1.88)	<0.001
AMI2: Aspirin at discharge					
Female	150,930	154,577	97.6	ref.	ref.
Male	247,653	251,152	98.6	1.71 (1.63-1.79)	<0.001
AMI3: ACEI or ARB for LVSD					
Female	26,127	27,376	95.4	ref.	ref.
Male	47,156	49,502	95.3	0.96 (0.90-1.03)	0.269
AMI4: Smoking cessation counseling					
Female	42,885	43,241	99.2	ref.	ref.
Male	93,180	93,741	99.4	1.38 (1.21-1.58)	<0.001
AMI5: Beta-blocker at discharge					
Female	149,171	152,804	97.6	ref.	ref.
Male	240,965	244,715	98.5	1.56 (1.49-1.64)	<0.001
AMI7a: Fibrinolytic within 30 minutes					
Female	254	523	48.6	ref.	ref.
Male	730	1,347	54.2	1.25 (1.02-1.53)	0.029
AMI8a: PCI within 90 minutes					
Female	12,629	15,029	84.0	ref.	ref.
Male	35,545	40,118	88.6	1.48 (1.40-1.56)	<0.001
HF1: Discharge instructions					
Female	264,674	308,679	85.7	ref.	ref.
Male	286,692	330,544	86.7	1.09 (1.07-1.10)	<0.001
HF2: Evaluation of LV function					
Female	391,232	403,675	96.9	ref.	ref.
Male	378,142	387,472	97.6	1.29 (1.25-1.32)	<0.001
HF3: ACEI or ARB for LVSD					
Female	92,111	98,257	93.7	ref.	ref.
Male	148,513	158,409	93.8	1.00 (0.97-1.03)	0.936
HF4: Smoking cessation counseling					

Female	51,445	52,630	97.7	ref.	ref.
Male	80,801	82,294	98.2	1.25 (1.15-1.35)	<0.001
PN2: Pnemococal vaccination given or screened for					
Female	247,221	269,382	91.8	ref.	ref.
Male	212,145	231,563	91.6	0.98 (0.96-1.00)	0.042
PN3a: Initial blood culture within 24 hours - ICU only					
Female	50,079	52,932	94.6	ref.	ref.
Male	53,544	56,305	95.1	1.10 (1.05-1.17)	<0.001
PN3b: Initial blood culture before first antibiotic dose - ED only					
Female	246,104	260,181	94.6	ref.	ref.
Male	230,916	243,503	94.8	1.05 (1.02-1.08)	<0.001
PN4: Smoking cessation counseling					
Female	103,237	106,615	96.8	ref.	ref.
Male	99,296	102,754	96.6	0.94 (0.90-0.99)	0.011
PN5c: First antibiotic dose within 6 hours					
Female	272,016	288,698	94.2	ref.	ref.
Male	252,643	266,222	94.9	1.14 (1.11-1.17)	<0.001
PN6: Antibioti selection consistent with guidelines					
Female	175,954	193,373	91.0	ref.	ref.
Male	156,410	172,235	90.8	0.98 (0.96-1.00)	0.059
PN7: Influenza vaccination given or screened for					
Female	180,348	200,180	90.1	ref.	ref.
Male	153,242	170,972	89.6	0.95 (0.93-0.97)	<0.001
SCIP1: Antibiotic within 1 hour before incision or 2 hours for vancomycin or quinolone					
Female	660,133	687,675	96.0	ref.	ref.
Male	383,816	399,901	96.0	1.00 (0.98-1.02)	0.660
SCIP2: Prophylactic antibiotic consistent with guidelines					
Female	672,428	691,674	97.2	ref.	ref.
Male	398,658	406,588	98.0	1.44 (1.40-1.48)	<0.001
SCIP3: Prophylactic ABX discontinued within 24 h. of surgery end time or 48 h. for cardiac surgery					
Female	613,378	657,129	93.3	ref.	ref.
Male	351,165	378,744	92.7	0.91 (0.89-0.92)	<0.001
SCIP4: Controlled 6 AM postoperative serum glucose - cardiac surgery					
Female	52,328	56,457	92.7	ref.	ref.
Male	114,589	124,004	92.4	0.96 (0.92-1.00)	0.038

SCIP6: appropriate hair removal					
Female	944,375	951,265	99.3	ref.	ref.
Male	613,124	620,263	98.8	0.63 (0.61-0.65)	<0.001
SCIPCARD2: Perioperative period beta blocker					
Female	210,810	232,468	90.7	ref.	ref.
Male	189,354	207,438	91.3	1.08 (1.05-1.10)	<0.001
SCIPVTE1: Recommended VTE prophylaxis ordered during admission					
Female	266,908	284,212	93.9	ref.	ref.
Male	177,139	192,153	92.2	0.76 (0.75-0.78)	<0.001
SCIPVTE2: Received VTE prophylaxis within 24 hours prior to or after surgery					
Female	260,379	282,821	92.1	ref.	ref.
Male	171,935	190,847	90.1	0.78 (0.77-0.80)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Age-Group

Measures and age group	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
AMI1: Aspirin at arrival					
under 65 years	141,150	142,677	98.9	ref.	ref.
65 to 74 years	69,462	70,636	98.3	0.64 (0.59-0.69)	<0.001
75 to 84 years	68,661	70,270	97.7	0.46 (0.43-0.50)	<0.001
85 or older	50,094	51,705	96.9	0.34 (0.31-0.36)	<0.001
AMI2: Aspirin at discharge					
under 65 years	188,910	191,432	98.7	ref.	ref.
65 to 74 years	86,865	88,378	98.3	0.77 (0.72-0.82)	<0.001
75 to 84 years	76,528	78,185	97.9	0.62 (0.58-0.66)	<0.001
85 or older	46,290	47,744	97.0	0.42 (0.40-0.45)	<0.001
AMI3: ACEI or ARB for LVSD					
under 65 years	30,729	31,955	96.2	ref.	ref.
65 to 74 years	16,782	17,608	95.3	0.81 (0.74-0.89)	<0.001
75 to 84 years	16,144	17,053	94.7	0.71 (0.65-0.77)	<0.001
85 or older	9,631	10,265	93.8	0.61 (0.55-0.67)	<0.001
AMI4: Smoking cessation counseling					
under 65 years	101,819	102,305	99.5	ref.	ref.
65 to 74 years	23,569	23,794	99.1	0.50 (0.43-0.59)	<0.001
75 to 84 years	8,919	9,074	98.3	0.27 (0.23-0.33)	<0.001
85 or older	1,762	1,813	97.2	0.16 (0.12-0.22)	<0.001
AMI5: Beta-blocker at discharge					
under 65 years	181,451	184,294	98.5	ref.	ref.
65 to 74 years	85,291	86,894	98.2	0.83 (0.78-0.89)	<0.001
75 to 84 years	76,749	78,361	97.9	0.75 (0.70-0.79)	<0.001
85 or older	46,654	47,979	97.2	0.55 (0.52-0.59)	<0.001
AMI7a: Fibrinolytic within 30 minutes					
under 65 years	648	1,212	53.5	ref.	ref.
65 to 74 years	194	358	54.2	1.03 (0.81-1.30)	0.810
75 to 84 years	93	202	46.0	0.74 (0.55-1.00)	0.051
85 or older	49	98	50.0	0.87 (0.58-1.31)	0.508
AMI8a: PCI within 90 minutes					
under 65 years	31,621	35,686	88.6	ref.	ref.
65 to 74 years	9,116	10,546	86.4	0.82 (0.77-0.87)	<0.001
75 to 84 years	5,398	6,466	83.5	0.65 (0.60-0.70)	<0.001
85 or older	2,040	2,451	83.2	0.64 (0.57-0.71)	<0.001
HF1: Discharge instructions					
under 65 years	178,658	207,594	86.1	ref.	ref.
65 to 74 years	123,528	143,712	86.0	0.99 (0.97-1.01)	0.373
75 to 84 years	151,451	175,244	86.4	1.03 (1.01-1.05)	0.001
85 or older	97,755	112,707	86.7	1.06 (1.04-1.08)	<0.001
HF2: Evaluation of LV function					

under 65 years	216,443	221,533	97.7	ref.	ref.
65 to 74 years	162,507	166,888	97.4	0.87 (0.84-0.91)	<0.001
75 to 84 years	220,926	227,028	97.3	0.85 (0.82-0.88)	<0.001
85 or older	169,548	175,750	96.5	0.64 (0.62-0.67)	<0.001
HF3: ACEI or ARB for LVSD					
under 65 years	95,238	99,651	95.6	ref.	ref.
65 to 74 years	52,803	56,622	93.3	0.64 (0.61-0.67)	<0.001
75 to 84 years	58,917	63,666	92.5	0.57 (0.55-0.60)	<0.001
85 or older	33,681	36,742	91.7	0.51 (0.49-0.53)	<0.001
HF4: Smoking cessation counseling					
under 65 years	78,879	80,061	98.5	ref.	ref.
65 to 74 years	31,278	32,007	97.7	0.64 (0.59-0.71)	<0.001
75 to 84 years	17,689	18,260	96.9	0.46 (0.42-0.51)	<0.001
85 or older	4,402	4,599	95.7	0.33 (0.29-0.39)	<0.001
PN2: Pnemococal vaccination given or screened for					
under 65 years	--	--	--	--	--
65 to 74 years	154,049	168,347	91.5	ref.	ref.
75 to 84 years	180,579	195,787	92.2	1.10 (1.08-1.13)	<0.001
85 or older	124,772	136,849	91.2	0.96 (0.93-0.98)	0.001
PN3a: Initial blood culture within 24 hours - ICU only					
under 65 years	43,154	45,370	95.1	ref.	ref.
65 to 74 years	23,165	24,488	94.6	0.90 (0.84-0.96)	0.003
75 to 84 years	23,777	25,070	94.8	0.94 (0.88-1.01)	0.111
85 or older	13,530	14,312	94.5	0.89 (0.82-0.97)	0.006
PN3b: Initial blood culture before first antibiotic dose - ED only					
under 65 years	180,506	192,602	93.7	ref.	ref.
65 to 74 years	92,223	97,052	95.0	1.28 (1.24-1.32)	<0.001
75 to 84 years	116,268	121,901	95.4	1.38 (1.34-1.43)	<0.001
85 or older	88,051	92,159	95.5	1.44 (1.39-1.49)	<0.001
PN4: Smoking cessation counseling					
under 65 years	138,481	142,258	97.3	ref.	ref.
65 to 74 years	39,066	40,713	96.0	0.65 (0.61-0.69)	<0.001
75 to 84 years	20,330	21,389	95.0	0.52 (0.49-0.56)	<0.001
85 or older	4,673	5,027	93.0	0.36 (0.32-0.40)	<0.001
PN5c: First antibiotic dose within 6 hours					
under 65 years	196,974	210,170	93.7	ref.	ref.
65 to 74 years	103,529	109,243	94.8	1.21 (1.18-1.25)	<0.001
75 to 84 years	128,404	134,912	95.2	1.32 (1.28-1.36)	<0.001
85 or older	95,798	100,641	95.2	1.33 (1.28-1.37)	<0.001
PN6: Antibioti selection consistent with guidelines					
under 65 years	145,078	158,844	91.3	ref.	ref.
65 to 74 years	60,719	67,599	89.8	0.84 (0.81-0.86)	<0.001
75 to 84 years	74,042	81,558	90.8	0.93 (0.91-0.96)	<0.001
85 or older	52,553	57,638	91.2	0.98 (0.95-1.01)	0.255
PN7: Influenza vaccination given or screened for					
under 65 years	92,150	105,920	87.0	ref.	ref.
65 to 74 years	80,824	89,267	90.5	1.43 (1.39-1.47)	<0.001

75 to 84 years	94,637	103,395	91.5	1.61 (1.57-1.66)	<0.001
85 or older	65,988	72,586	90.9	1.49 (1.45-1.54)	<0.001
SCIP1: Antibiotic within 1 hour before incision or 2 hours for vancomycin or quinolone					
under 65 years	543,747	565,392	96.2	ref.	ref.
65 to 74 years	264,596	275,189	96.2	0.99 (0.97-1.02)	0.637
75 to 84 years	185,731	194,018	95.7	0.89 (0.87-0.92)	<0.001
85 or older	49,930	53,035	94.1	0.64 (0.62-0.67)	<0.001
SCIP2: Prophylactic antibiotic consistent with guidelines					
under 65 years	554,132	569,841	97.2	ref.	ref.
65 to 74 years	272,719	278,267	98.0	1.39 (1.35-1.44)	<0.001
75 to 84 years	192,365	196,738	97.8	1.25 (1.21-1.29)	<0.001
85 or older	51,927	53,474	97.1	0.95 (0.90-1.00)	0.066
SCIP3: Prophylactic ABX discontinued within 24 h. of surgery end time or 48 h. for cardiac surgery					
under 65 years	509,115	543,621	93.7	ref.	ref.
65 to 74 years	243,668	262,144	93.0	0.89 (0.88-0.91)	<0.001
75 to 84 years	168,265	182,048	92.4	0.83 (0.81-0.84)	<0.001
85 or older	43,548	48,116	90.5	0.65 (0.63-0.67)	<0.001
SCIP4: Controlled 6 AM postoperative serum glucose - cardiac surgery					
under 65 years	72,979	79,327	92.0	ref.	ref.
65 to 74 years	52,359	56,792	92.2	1.03 (0.99-1.07)	0.185
75 to 84 years	36,879	39,404	93.6	1.27 (1.21-1.33)	<0.001
85 or older	4,704	4,942	95.2	1.72 (1.51-1.96)	<0.001
SCIP6: appropriate hair removal					
under 65 years	810,303	818,220	99.0	ref.	ref.
65 to 74 years	380,445	383,750	99.1	1.12 (1.08-1.17)	<0.001
75 to 84 years	279,516	281,752	99.2	1.22 (1.17-1.28)	<0.001
85 or older	87,319	87,891	99.3	1.49 (1.37-1.62)	<0.001
SCIPCARD2: Perioperative period beta blocker					
under 65 years	143,202	157,742	90.8	ref.	ref.
65 to 74 years	125,183	136,865	91.5	1.09 (1.06-1.12)	<0.001
75 to 84 years	101,842	111,827	91.1	1.04 (1.01-1.06)	0.010
85 or older	29,959	33,499	89.4	0.86 (0.83-0.89)	<0.001
SCIPVTE1: Recommended VTE prophylaxis ordered during admission					
under 65 years	204,866	222,992	91.9	ref.	ref.
65 to 74 years	111,168	117,886	94.3	1.46 (1.42-1.51)	<0.001
75 to 84 years	92,459	97,769	94.6	1.54 (1.49-1.59)	<0.001
85 or older	35,581	37,747	94.3	1.45 (1.39-1.52)	<0.001
SCIPVTE2: Received VTE prophylaxis within 24 hours prior to or after surgery					
under 65 years	199,284	221,436	90.0	ref.	ref.
65 to 74 years	108,467	117,367	92.4	1.35 (1.32-1.39)	<0.001
75 to 84 years	90,083	97,336	92.5	1.38 (1.34-1.42)	<0.001
85 or older	34,507	37,557	91.9	1.26 (1.21-1.31)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Census Region

Measures and census region	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
AMI1: Aspirin at arrival					
South	126,608	129,145	98.0	ref.	ref.
Midwest	75,072	76,242	98.5	1.29 (1.20-1.38)	<0.001
Northeast	62,335	63,302	98.5	1.29 (1.20-1.39)	<0.001
West	61,600	62,432	98.7	1.48 (1.37-1.61)	<0.001
US Territories	3,752	4,167	90.0	0.18 (0.16-0.20)	<0.001
AMI2: Aspirin at discharge					
South	154,361	157,475	98.0	ref.	ref.
Midwest	96,702	98,082	98.6	1.41 (1.33-1.51)	<0.001
Northeast	72,945	73,951	98.6	1.46 (1.36-1.57)	<0.001
West	71,443	72,548	98.5	1.30 (1.22-1.40)	<0.001
US Territories	3,142	3,683	85.3	0.12 (0.11-0.13)	<0.001
AMI3: ACEI or ARB for LVSD					
South	30,162	31,629	95.4	ref.	ref.
Midwest	17,573	18,369	95.7	1.07 (0.98-1.17)	0.114
Northeast	13,443	14,124	95.2	0.96 (0.87-1.05)	0.392
West	11,325	11,875	95.4	1.00 (0.91-1.11)	0.977
US Territories	783	884	88.6	0.38 (0.30-0.47)	<0.001
AMI4: Smoking cessation counseling					
South	59,052	59,326	99.5	ref.	ref.
Midwest	34,282	34,529	99.3	0.64 (0.54-0.77)	<0.001
Northeast	21,314	21,497	99.1	0.54 (0.45-0.65)	<0.001
West	20,782	20,940	99.2	0.61 (0.50-0.74)	<0.001
US Territories	639	694	92.1	0.05 (0.04-0.07)	<0.001
AMI5: Beta-blocker at discharge					
South	150,602	153,698	98.0	ref.	ref.
Midwest	94,600	96,058	98.5	1.33 (1.25-1.42)	<0.001
Northeast	72,919	73,919	98.6	1.50 (1.40-1.61)	<0.001
West	68,776	70,048	98.2	1.11 (1.04-1.19)	0.002
US Territories	3,248	3,805	85.4	0.12 (0.11-0.13)	<0.001
AMI7a: Fibrinolytic within 30 minutes					
South	386	691	55.9	ref.	ref.
Midwest	71	157	45.2	0.65 (0.46-0.92)	0.016
Northeast	114	221	51.6	0.84 (0.62-1.14)	0.266
West	325	577	56.3	1.02 (0.82-1.27)	0.868
US Territories	88	224	39.3	0.51 (0.38-0.70)	<0.001
AMI8a: PCI within 90 minutes					
South	18,249	21,033	86.8	ref.	ref.
Midwest	12,047	13,530	89.0	1.24 (1.16-1.33)	<0.001
Northeast	7,776	8,945	86.9	1.01 (0.94-1.09)	0.695
West	10,077	11,545	87.3	1.05 (0.98-1.12)	0.182

US Territories	26	96	27.1	0.06 (0.04-0.09)	<0.001
HF1: Discharge instructions					
South	230,620	268,753	85.8	ref.	ref.
Midwest	123,214	142,800	86.3	1.04 (1.02-1.06)	<0.001
Northeast	104,441	118,681	88.0	1.21 (1.19-1.24)	<0.001
West	87,789	101,987	86.1	1.02 (1.00-1.04)	0.037
US Territories	5,328	7,036	75.7	0.52 (0.49-0.55)	<0.001
HF2: Evaluation of LV function					
South	313,881	323,530	97.0	ref.	ref.
Midwest	177,519	182,711	97.2	1.05 (1.02-1.09)	0.004
Northeast	154,546	157,057	98.4	1.89 (1.81-1.98)	<0.001
West	117,503	120,882	97.2	1.07 (1.03-1.11)	0.001
US Territories	5,975	7,019	85.1	0.18 (0.16-0.19)	<0.001
HF3: ACEI or ARB for LVSD					
South	102,341	109,272	93.7	ref.	ref.
Midwest	54,335	57,985	93.7	1.01 (0.97-1.05)	0.700
Northeast	44,314	47,239	93.8	1.03 (0.98-1.07)	0.259
West	37,449	39,660	94.4	1.15 (1.09-1.21)	<0.001
US Territories	2,200	2,525	87.1	0.46 (0.41-0.52)	<0.001
HF4: Smoking cessation counseling					
South	60,779	61,825	98.3	ref.	ref.
Midwest	30,645	31,366	97.7	0.73 (0.66-0.81)	<0.001
Northeast	20,880	21,315	98.0	0.83 (0.74-0.92)	<0.001
West	19,359	19,792	97.8	0.77 (0.69-0.86)	<0.001
US Territories	585	629	93.0	0.23 (0.17-0.31)	<0.001
PN2: Pnemococal vaccination given or screened for					
South	179,960	194,612	92.5	ref.	ref.
Midwest	114,202	124,453	91.8	0.91 (0.88-0.93)	<0.001
Northeast	88,746	95,893	92.5	1.01 (0.98-1.04)	0.466
West	75,360	83,017	90.8	0.80 (0.78-0.82)	<0.001
US Territories	1,132	3,008	37.6	0.05 (0.05-0.05)	<0.001
PN3a: Initial blood culture within 24 hours - ICU only					
South	41,731	43,940	95.0	ref.	ref.
Midwest	24,196	25,563	94.7	0.94 (0.87-1.00)	0.065
Northeast	16,787	17,632	95.2	1.05 (0.97-1.14)	0.225
West	20,703	21,725	95.3	1.07 (0.99-1.16)	0.072
US Territories	209	380	55.0	0.06 (0.05-0.08)	<0.001
PN3b: Initial blood culture before first antibiotic dose - ED only					
South	187,438	197,520	94.9	ref.	ref.
Midwest	110,172	115,477	95.4	1.12 (1.08-1.16)	<0.001
Northeast	93,600	98,873	94.7	0.95 (0.92-0.99)	0.008
West	83,935	89,171	94.1	0.86 (0.83-0.89)	<0.001
US Territories	1,903	2,673	71.2	0.13 (0.12-0.14)	<0.001
PN4: Smoking cessation counseling					
South	91,072	93,604	97.3	ref.	ref.
Midwest	48,987	51,087	95.9	0.65 (0.61-0.69)	<0.001
Northeast	32,410	33,325	97.3	0.98 (0.91-1.06)	0.695

West	29,466	30,694	96.0	0.67 (0.62-0.72)	<0.001
US Territories	615	677	90.8	0.28 (0.21-0.36)	<0.001
PN5c: First antibiotic dose within 6 hours					
South	208,883	220,861	94.6	ref.	ref.
Midwest	128,036	134,173	95.4	1.20 (1.16-1.23)	<0.001
Northeast	96,895	102,680	94.4	0.96 (0.93-0.99)	0.014
West	88,422	93,297	94.8	1.04 (1.01-1.08)	0.024
US Territories	2,469	3,955	62.4	0.10 (0.09-0.10)	<0.001
PN6: Antibioti selection consistent with guidelines					
South	134,164	147,904	90.7	ref.	ref.
Midwest	78,294	86,405	90.6	0.99 (0.96-1.02)	0.434
Northeast	59,152	63,980	92.5	1.25 (1.21-1.30)	<0.001
West	58,295	63,887	91.2	1.07 (1.03-1.10)	<0.001
US Territories	2,487	3,463	71.8	0.26 (0.24-0.28)	<0.001
PN7: Influenza vaccination given or screened for					
South	136,798	151,103	90.5	ref.	ref.
Midwest	82,023	90,887	90.2	0.97 (0.94-0.99)	0.021
Northeast	60,341	66,389	90.9	1.04 (1.01-1.08)	0.008
West	53,674	60,817	88.3	0.79 (0.76-0.81)	<0.001
US Territories	763	1,972	38.7	0.07 (0.06-0.07)	<0.001
SCIP1: Antibiotic within 1 hour before incision or 2 hours for vancomycin or quinolone					
South	394,545	409,842	96.3	ref.	ref.
Midwest	266,459	276,954	96.2	0.98 (0.96-1.01)	0.223
Northeast	193,461	200,392	96.5	1.08 (1.05-1.11)	<0.001
West	183,368	192,227	95.4	0.80 (0.78-0.82)	<0.001
US Territories	6,171	8,219	75.1	0.12 (0.11-0.12)	<0.001
SCIP2: Prophylactic antibiotic consistent with guidelines					
South	403,132	414,194	97.3	ref.	ref.
Midwest	273,589	279,578	97.9	1.25 (1.21-1.29)	<0.001
Northeast	197,917	202,575	97.7	1.17 (1.13-1.21)	<0.001
West	189,102	194,077	97.4	1.04 (1.01-1.08)	0.015
US Territories	7,403	7,896	93.8	0.41 (0.38-0.45)	<0.001
SCIP3: Prophylactic ABX discontinued within 24 h. of surgery end time or 48 h. for cardiac surgery					
South	361,060	388,513	92.9	ref.	ref.
Midwest	248,442	264,681	93.9	1.16 (1.14-1.19)	<0.001
Northeast	180,683	191,769	94.2	1.24 (1.21-1.27)	<0.001
West	169,118	183,133	92.3	0.92 (0.90-0.94)	<0.001
US Territories	5,293	7,833	67.6	0.16 (0.15-0.17)	<0.001
SCIP4: Controlled 6 AM postoperative serum glucose - cardiac surgery					
South	66,018	71,829	91.9	ref.	ref.
Midwest	40,808	44,136	92.5	1.08 (1.03-1.13)	<0.001
Northeast	29,288	30,993	94.5	1.51 (1.43-1.60)	<0.001
West	29,005	31,251	92.8	1.14 (1.08-1.20)	<0.001
US Territories	1,802	2,256	79.9	0.35 (0.31-0.39)	<0.001
SCIP6: appropriate hair removal					
South	587,629	592,145	99.2	ref.	ref.
Midwest	385,646	388,859	99.2	0.92 (0.88-0.97)	<0.001

Northeast	297,284	299,532	99.2	1.02 (0.97-1.07)	0.532
West	279,180	282,116	99.0	0.73 (0.70-0.77)	<0.001
US Territories	7,844	8,961	87.5	0.05 (0.05-0.06)	<0.001
SCIPCARD2: Perioperative period beta blocker					
South	147,784	162,051	91.2	ref.	ref.
Midwest	106,546	117,054	91.0	0.98 (0.95-1.01)	0.113
Northeast	85,381	92,184	92.6	1.21 (1.18-1.25)	<0.001
West	59,482	67,099	88.6	0.75 (0.73-0.78)	<0.001
US Territories	993	1,545	64.3	0.17 (0.16-0.19)	<0.001
SCIPVTE1: Recommended VTE prophylaxis ordered during admission					
South	169,988	182,774	93.0	ref.	ref.
Midwest	99,327	106,377	93.4	1.06 (1.03-1.09)	<0.001
Northeast	96,401	100,803	95.6	1.65 (1.59-1.71)	<0.001
West	76,837	84,597	90.8	0.74 (0.72-0.77)	<0.001
US Territories	1,521	1,843	82.5	0.36 (0.31-0.40)	<0.001
SCIPVTE2: Received VTE prophylaxis within 24 hours prior to or after surgery					
South	164,922	181,622	90.8	ref.	ref.
Midwest	96,639	105,893	91.3	1.06 (1.03-1.09)	<0.001
Northeast	94,639	100,532	94.1	1.63 (1.58-1.68)	<0.001
West	74,698	83,964	89.0	0.82 (0.79-0.84)	<0.001
US Territories	1,443	1,685	85.6	0.60 (0.53-0.69)	<0.001

Disparities analysis for 26 performance measures using 2009 Clinical Data Warehouse

By Hospital Rural/Urban Location (less than 0.1 of cases were excluded due to missing data on hospital rural/urban location)

Measures and hospital rural/urban location	Num	Den	Percent	Unadjusted OR (95%CI)	p-value
AMI1: Aspirin at arrival					
Urban	291,143	295,802	98.4	ref.	ref.
Rural	38,206	39,467	96.8	0.48 (0.46-0.52)	<0.001
AMI2: Aspirin at discharge					
Urban	358,943	364,751	98.4	ref.	ref.
Rural	39,639	40,973	96.7	0.48 (0.45-0.51)	<0.001
AMI3: ACEI or ARB for LVSD					
Urban	65,715	68,816	95.5	ref.	ref.
Rural	7,570	8,064	93.9	0.72 (0.66-0.80)	<0.001
AMI4: Smoking cessation counseling					
Urban	122,296	123,021	99.4	ref.	ref.
Rural	13,772	13,964	98.6	0.43 (0.36-0.50)	<0.001
AMI5: Beta-blocker at discharge					
Urban	350,908	356,917	98.3	ref.	ref.
Rural	39,223	40,596	96.6	0.49 (0.46-0.52)	<0.001
AMI7a: Fibrinolytic within 30 minutes					
Urban	743	1,378	53.9	ref.	ref.
Rural	241	491	49.1	0.82 (0.67-1.01)	0.066
AMI8a: PCI within 90 minutes					
Urban	44,330	50,581	87.6	ref.	ref.
Rural	3,845	4,568	84.2	0.75 (0.69-0.82)	<0.001
HF1: Discharge instructions					
Urban	462,198	530,366	87.1	ref.	ref.
Rural	89,161	108,850	81.9	0.67 (0.66-0.68)	<0.001
HF2: Evaluation of LV function					
Urban	640,201	651,626	98.2	ref.	ref.
Rural	129,180	139,524	92.6	0.22 (0.22-0.23)	<0.001
HF3: ACEI or ARB for LVSD					
Urban	204,835	216,883	94.4	ref.	ref.
Rural	35,794	39,788	90.0	0.53 (0.51-0.55)	<0.001

HF4: Smoking cessation counseling					
Urban	109,946	111,420	98.7	ref.	ref.
Rural	22,294	23,495	94.9	0.25 (0.23-0.27)	<0.001
PN2: Pnemococal vaccination given or screened for					
Urban	343,445	372,029	92.3	ref.	ref.
Rural	115,907	128,899	89.9	0.74 (0.73-0.76)	<0.001
PN3a: Initial blood culture within 24 hours - ICU only					
Urban	82,609	86,195	95.8	ref.	ref.
Rural	21,017	23,045	91.2	0.45 (0.43-0.48)	<0.001
PN3b: Initial blood culture before first antibiotic dose - ED only					
Urban	370,713	390,752	94.9	ref.	ref.
Rural	106,285	112,910	94.1	0.87 (0.84-0.89)	<0.001
PN4: Smoking cessation counseling					
Urban	153,343	157,007	97.7	ref.	ref.
Rural	49,195	52,364	93.9	0.37 (0.35-0.39)	<0.001
PN5c: First antibiotic dose within 6 hours					
Urban	391,112	414,535	94.3	ref.	ref.
Rural	133,539	140,375	95.1	1.17 (1.14-1.20)	<0.001
PN6: Antibioti selection consistent with guidelines					
Urban	244,813	267,228	91.6	ref.	ref.
Rural	87,548	98,376	89.0	0.74 (0.72-0.76)	<0.001
PN7: Influenza vaccination given or screened for					
Urban	250,927	277,437	90.4	ref.	ref.
Rural	82,639	93,694	88.2	0.79 (0.77-0.81)	<0.001
SCIP1: Antibiotic within 1 hour before incision or 2 hours for vancomycin or quinolone					
Urban	873,006	907,766	96.2	ref.	ref.
Rural	170,887	179,749	95.1	0.77 (0.75-0.79)	<0.001
SCIP2: Prophylactic antibiotic consistent with guidelines					
Urban	895,997	917,696	97.6	ref.	ref.
Rural	175,035	180,505	97.0	0.77 (0.75-0.80)	<0.001
SCIP3: Prophylactic ABX discontinued within 24 h. of surgery end time or 48 h. for cardiac surgery					
Urban	805,137	863,438	93.2	ref.	ref.
Rural	159,351	172,373	92.4	0.89 (0.87-0.90)	<0.001
SCIP4: Controlled 6 AM postoperative serum glucose - cardiac surgery					
Urban	155,675	168,209	92.5	ref.	ref.
Rural	11,246	12,256	91.8	0.90 (0.84-0.96)	0.001

SCIP6: appropriate hair removal					
Urban	1,304,767	1,316,311	99.1	ref.	ref.
Rural	252,581	255,064	99.0	0.90 (0.86-0.94)	<0.001
SCIPCARD2: Perioperative period beta blocker					
Urban	341,816	374,870	91.2	ref.	ref.
Rural	58,327	65,020	89.7	0.84 (0.82-0.87)	<0.001
SCIPVTE1: Recommended VTE prophylaxis ordered during admission					
Urban	368,551	393,488	93.7	ref.	ref.
Rural	75,501	82,880	91.1	0.69 (0.67-0.71)	<0.001
SCIPVTE2: Received VTE prophylaxis within 24 hours prior to or after surgery					
Urban	358,864	391,436	91.7	ref.	ref.
Rural	73,455	82,235	89.3	0.76 (0.74-0.78)	<0.001