# NATIONAL QUALITY FORUM

**Measure Evaluation 4.1**
**December 2009**

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

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

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

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

Evaluation ratings of the extent to which the criteria are met
C = Completely (unquestionably demonstrated to meet the criterion)
P = Partially (demonstrated to partially meet the criterion)
M = Minimally (addressed BUT demonstrated to only minimally meet the criterion)
N = Not at all (NOT addressed; OR incorrectly addressed; OR demonstrated to NOT meet the criterion)
NA = Not applicable (only an option for a few subcriteria as indicated)

| (for NQF staff use) **NQF Review #:** 0077 **NQF Project:** Cardiovascular Endorsement Maintenance 2010 |
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| **MEASURE DESCRIPTIVE INFORMATION** |
| De.1 **Measure Title:** Heart Failure: Symptom and Activity Assessment |
| De.2 **Brief description of measure**: Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented |
| 1.1-2 **Type of Measure:** Process<br>De.3 **If included in a composite or paired with another measure, please identify composite or paired measure** |
| De.4 **National Priority Partners Priority Area:** Patient and family engagement<br>De.5 **IOM Quality Domain**: Effectiveness, Patient-centered, Equity<br>De.6 **Consumer Care Need:** Living with illness |

| **CONDITIONS FOR CONSIDERATION BY NQF** | |
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| Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards: | **NQF Staff** |
| **A.** The measure is in the public domain or an intellectual property (measure steward agreement) is signed. *Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.*<br>A.1 **Do you attest that the measure steward holds intellectual property rights to the measure and the right to use aspects of the measure owned by another entity (e.g., risk model, code set)?** Yes<br>A.2 **Indicate if Proprietary Measure** (*as defined in measure steward agreement*)**:**<br>A.3 **Measure Steward Agreement:** Agreement will be signed and submitted prior to or at the time of measure submission<br>A.4 **Measure Steward Agreement attached:** | **A**<br>**Y☐**<br>**N☐** |
| **B.** The measure owner/steward verifies there is an identified responsible entity and process to maintain and | **B** |

| | |
|---|---|
| update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least every 3 years. Yes, information provided in contact section | Y☐ N☐ |
| **C.** The intended use of the measure includes both public reporting and quality improvement.<br>►**Purpose:** Public reporting, Internal quality improvement<br>Accountability | C<br>Y☐<br>N☐ |
| **D.** The requested measure submission information is complete. Generally, measures should be fully developed and tested so that all the evaluation criteria have been addressed and information needed to evaluate the measure is provided. Measures that have not been tested are only potentially eligible for a time-limited endorsement and in that case, measure owners must verify that testing will be completed within 12 months of endorsement.<br>D.1**Testing:** Yes, fully developed and tested<br>D.2 **Have NQF-endorsed measures been reviewed to identify if there are similar or related measures?**<br>Yes | D<br>Y☐<br>N☐ |
| (for NQF staff use**) Have all conditions for consideration been met?**<br>**Staff Notes to Steward** (*if submission returned*)**:** | **Met**<br>Y☐<br>N☐ |
| **Staff Notes to Reviewers** (*issues or questions regarding any criteria*)**:** | |
| **Staff Reviewer Name(s):** | |

| | |
|---|---|
| **TAP/Workgroup Reviewer Name:** | |
| **Steering Committee Reviewer Name:** | |
| **1. IMPORTANCE TO MEASURE AND REPORT** | |
| Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in or overall poor performance.<br>*Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria.* (evaluation criteria)<br>**1a. High Impact** | **Eval Rating** |
| (for NQF staff use) **Specific NPP goal**: | |
| 1a.1 **Demonstrated High Impact Aspect of Healthcare:** Affects large numbers, Leading cause of morbidity/mortality, High resource use, Severity of illness, Patient/societal consequences of poor quality<br>1a.2<br><br>1a.3 **Summary of Evidence of High Impact:** Heart failure is a chronic condition that poses a major and growing threat to the public's health. Improving the effectiveness of care and optimizing patient outcomes will become increasingly important as the population of the United States ages.<br>•Currently, approximately 5.7 million Americans are living with heart failure.<br>•Heart failure incidence approaches 10 per 1000 population after 65 years of age.<br>•A person aged 40 years or older has a 1 in 5 chance of developing heart failure.<br>•Hospital discharges for heart failure rose from 877,000 in 1996 to 1,106,000 in 2006.<br>•80% percent of men and 70% of women less than 65 years of age who have heart failure will die within 8 years.<br>•In 2005, 1 in 8 death certificates (292,214 deaths) in the United States mentioned heart failure.<br>•For 2009, the estimated direct and indirect cost of heart failure in the United States is $37.2 billion, representing a portion of the estimated $475.3 billion for all cardiovascular diseases.<br><br>1a.4 **Citations for Evidence of High Impact:** Lloyd-Jones D, Adams RJ, Brown TM, et al., American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics–2010 update: a report from the American Heart Association. Circulation. 2010;126:e46-e215. | 1a<br>C☐<br>P☐<br>M☐<br>N☐ |

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

**1b. Opportunity for Improvement**

**1b.1 Benefits (improvements in quality) envisioned by use of this measure:** This measure is aimed at improving the number of patients with heart failure who receive a quantitative assessment of their symptom and activity level. Assessment of a patient´s symptoms and activity should be an integral component of all initial and ongoing evaluations for patients with heart failure. Symptom and activity level is an important patient-centered outcome critical to guide treatment decisions.

**1b.2 Summary of data demonstrating performance gap (variation or overall poor performance) across providers:**
Using baseline data from the Registry to Improve the Use of Evidence-Based Heart Failure Therapies in the Outpatient Setting (IMPROVE HF), Fonarow and colleagues assessed contemporary care patterns for heart failure in the outpatient setting among 167 outpatient cardiology practices in the United States. NYHA functional class was found to be qualitatively documented by symptoms and functional limitations in 27.0% of medical records and quantitatively documented in 31.5% (58.5% total).(1)

(1)Fonarow GC, Yancy CW, Albert NM, et al. Heart failure care in the outpatient cardiology practice setting: findings from IMPROVE HF. Circ Heart Fail. 2008; 1: 98-106.

Please see additional performance data in section 1 of the attached Measure Testing Summary.

**1b.3 Citations for data on performance gap:**
Please see additional performance data in section 1 and project descriptions at the end of the attached Measure Testing Summary.

**1b.4 Summary of Data on disparities by population group:**
We are not aware of any publications/evidence outlining disparities in the area of symptom and activity assessment for heart failure patients.

**1b.5 Citations for data on Disparities:**

**1b**
**C☐**
**P☐**
**M☐**
**N☐**

**1c. Outcome or Evidence to Support Measure Focus**

**1c.1 Relationship to Outcomes** (*For non-outcome measures, briefly describe the relationship to desired outcome. For outcomes, describe why it is relevant to the target population*)**:** Initial and ongoing evaluations of patients with heart failure should include an assessment of symptoms and their functional consequences. These assessments serve as the basis for making treatment decisions, monitoring the effects of treatment, and modifying treatment as appropriate. The results of this assessment have also been shown to have prognostic significance. Decreasing symptoms and improving function are two of the primary goals of heart failure treatment and represent important patient-centric outcomes for heart failure care.(1)

(1) Radford M, Arnold JMO, Bennett SJ. ACC/AHA key data elements and definitions for measuring the clinical management and outcomes of patients with chronic heart failure: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Data Standards (Writing Committee to Develop Heart Failure Clinical Data Standards): Developed in Collaboration With the American College of Chest Physicians and the International Society for Heart and Lung Transplantation: Endorsed by the Heart Failure Society of America. Circulation. 2005;112:1888-1916.

**1c.2-3. Type of Evidence:** Evidence-based guideline

**1c.4 Summary of Evidence** (*as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome*)**:**
"During the initial and subsequent visits, healthcare providers should inquire about the type, severity, and duration of symptoms that occur during activities of daily living and that may impair the patient's functional capacity. A variety of approaches have been used to quantify the degree of functional limitation imposed by [heart failure]." (1)

These assessments serve as the basis for making treatment decisions, monitoring the effects of treatment,

**1c**
**C☐**
**P☐**
**M☐**
**N☐**

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

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

**Comment [k4]: 1c.** The measure focus is:
•an outcome (e.g., morbidity, mortality, function, health-related quality of life) that is relevant to, or associated with, a national health goal/priority, the condition, population, and/or care being addressed;
OR
•if an intermediate outcome, process, structure, etc., there is **evidence** that supports the specific measure focus as follows:
oIntermediate outcome – evidence that the measured intermediate outcome (e.g., blood pressure, Hba1c) leads to improved health/avoidance of harm or cost/benefit.
oProcess – evidence that the measured clinical or administrative process leads to improved health/avoidance of harm and
if the measure focus is on one step in a multi-step care process, it measures the step that has the greatest effect on improving the specified desired outcome(s).
oStructure – evidence that the measured structure supports the consistent delivery of effective processes or access that lead to improved health/avoidance of harm or cost/benefit.
oPatient experience – evidence that an association exists between the measure of patient experience of health care and the outcomes, values and preferences of individuals/ the public.
oAccess – evidence that an association exists between access to a health service and the outcomes of, or experience with, care.
oEfficiency – demonstration of an association between the measured resource use and level of performance with respect to one or more of the other five IOM aims of quality.

**Comment [k5]:** 4 Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multi-step process, the step with the greatest effect on the desired outcome should be selected as the focus of measurement. For example, although assessment of immunization status and recommending immunization are necessary steps, they are not sufficient to achieve the desired impact on health status – patients must be vaccinated to achieve immunity. This does not preclude consideration of measures of preventive screening interventions where there is a strong link with desired outcomes (e.g., … [1]

and modifying treatment as appropriate. The results of this assessment have also been shown to have prognostic significance. Decreasing symptoms and improving function are two of the primary goals of heart failure treatment and represent important patient-centric outcomes for heart failure care.

Jessup M, Abraham WT, Casey DE, et al., writing on behalf of the 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult Writing Committee. 2009 focused update: ACCF/AHA guidelines for the diagnosis and management of heart failure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol. 2009;53:1343–82.

1c.5 **Rating of strength/quality of evidence (***also provide narrative description of the rating and by whom***):**
Level of Evidence: C (Only consensus opinion of experts, case studies, or standard-of-care as noted by the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines)

1c.6 **Method for rating evidence:** ACCF/AHA Levels of Evidence are classified as follows:
-Level of Evidence A: Data derived from multiple randomized clinical trials or meta-analyses
-Level of Evidence B: Data derived from a single randomized trial or nonrandomized studies
-Level of Evidence C: Only consensus opinion of experts, case studies, or standard-of-care

Methodologies and policies from the ACC/AHA Task Force on Practice Guidelines state that "assigning a Level of Evidence B or C should not be construed as implying that the recommendation is weak. Many important clinical questions addressed in the guidelines either do not lend themselves to experimentation or have not yet been addressed by high quality investigations. Even though randomized controlled trials may not be available, the clinical question may be so relevant that it would be delinquent to not include it in the guideline."

HFSA Levels of Evidence are classified as follows:
Level A : Randomized, Controlled, Clinical Trials
May be assigned based on results of a single Trials
Level B: Cohort and Case-Control Studies
Post hoc, subgroup analysis, and meta-analysis
Prospective observational studies or registries
Level C: Expert Opinion
Observational studies-epidemiologic findings
Safety Reporting from large-scale use in practice

1c.7 **Summary of Controversy/Contradictory Evidence:**

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

1c.9 **Quote the Specific guideline recommendation (***including guideline number and/or page number***):**
In patients presenting with [heart failure], initial assessment should be made of a patient's ability to perform routine and desired activities of daily living. (Class I, Level of Evidence: C)(1) (p.e9 in web publication)

Assessment should be made at each visit of the ability of a patient with [heart failure] to perform routine and desired activities of daily living. (Class I, Level of Evidence: C) (ACCF/AHA, 2009)(1) (p.e10 in web publication)

During the initial and subsequent visits, healthcare providers should inquire about the type, severity, and duration of symptoms that occur during activities of daily living and that may impair the patient's functional capacity. A variety of approaches have been used to quantify the degree of functional limitation imposed by [heart failure]. The most widely used scale is the NYHA functional classification, but this system is subject to considerable interobserver variability and is insensitive to important changes in exercise capacity. These limitations may be overcome by formal tests of exercise tolerance. (ACCF/AHA, 2009) (1) (p.e14 in web publication)

**Comment [k6]:** 3 The strength of the body of evidence for the specific measure focus should be systematically assessed and rated (e.g., USPSTF grading system http://www.ahrq.gov/clinic/uspstf07/methods/benefit.htm). If the USPSTF grading system was not used, the grading system is explained including how it relates to the USPSTF grades or why it does not. However, evidence is not limited to quantitative studies and the best type of evidence depends upon the question being studied (e.g., randomized controlled trials appropriate for studying drug efficacy are not well suited for complex system changes). When qualitative studies are used, appropriate qualitative research criteria are used to judge the strength of the evidence.

The evaluation of patients with an established diagnosis of [heart failure] is undertaken to identify the etiology, assess symptom nature and severity, determine functional impairment, and establish a prognosis. Follow-up of patients with [heart failure] or cardiac dysfunction involves continuing reassessment of symptoms, functional capacity, prognosis, and therapeutic effectiveness. (HFSA, 2010) (2) (p. e44 in web publication)

It is recommended that the severity of clinical disease and functional limitation be evaluated and recorded and the ability to perform typical daily activities be determined. This evaluation may be graded by metrics such as New York Heart Association (NYHA) functional class (Strength of Evidence = A) or by the 6-minute walk test. (Strength of Evidence = C) (HFSA, 2010) (2) (e47 in web publication)

1c.10 **Clinical Practice Guideline Citation:** (1) Jessup M, Abraham WT, Casey DE, et al., writing on behalf of the 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult Writing Committee. 2009 focused update: ACCF/AHA guidelines for the diagnosis and management of heart failure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol. 2009;53:1343–82.

Lindenfeld J, Albert NM, Boehmer JP, et al. HFSA 2010 Comprehensive Heart Failure Practice Guideline. J Card Fail. 2010;16:e1-e194.

1c.11 **National Guideline Clearinghouse or other URL:** ACCF/AHA - http://content.onlinejacc.org/cgi/reprint/53/15/e1.pdf; HFSA - http://www.heartfailureguideline.org/

1c.12 **Rating of strength of recommendation (***also provide narrative description of the rating and by whom***):**
Class I (Conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful, and effective by the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines)

1c.13 **Method for rating strength of recommendation** (*If different from USPSTF system, also describe rating and how it relates to USPSTF)***:**
ACCF/AHA Classifications of Recommendations are classified as follows:
Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful, and effective.
Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment.
Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy.
Class IIb: Usefulness/efficacy is less well established by evidence/opinion.
Class III: Conditions for which there is evidence and/or general agreement that a procedure/treatment is not useful/effective and in some cases may be harmful.

1c.14 **Rationale for using this guideline over others:**
It is the PCPI policy to use guidelines, which are evidence-based, applicable to physicians and other healthcare providers, and developed by a national specialty organization or government agency. In addition, the PCPI has now expanded what is acceptable as the evidence base for measures to included documented quality improvement (QI) initiatives or implementation projects that have demonstrated improvement in the quality of care.

**Comment [k7]:** USPSTF grading system **http://www.ahrq.gov/clinic/uspstf/grades.htm**: **A -** The USPSTF recommends the service. There is high certainty that the net benefit is substantial. **B -** The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. **C -** The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small. Offer or provide this service only if other considerations support the offering or providing the service in an individual patient. **D -** The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. **I -** The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

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| **TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for** *Importance to Measure and Report?* | **1** |
| **Steering Committee: Was the threshold criterion,** *Importance to Measure and Report***, met?**<br>**Rationale:** | **1**<br>**Y☐**<br>**N☐** |
| **2. SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES** | |
| Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about | **Eval** |

| the quality of care when implemented. (evaluation criteria) | Rating |
|---|---|
| **2a. MEASURE SPECIFICATIONS** | |
| **S.1 Do you have a web page where current detailed measure specifications can be obtained?**<br>**S.2 If yes, provide web page URL:**<br><br>**2a. Precisely Specified** | |
| **2a.1 Numerator Statement (***Brief, text description of the numerator - what is being measured about the target population, e.g. target condition, event, or outcome***):**<br>Patient visits with quantitative results of an evaluation of both current level of activity and clinical symptoms documented*<br><br>*Evaluation and quantitative results documented should include:<br>- documentation of New York Heart Association (NYHA) Class OR<br>- documentation of completion of a valid, reliable, disease-specific instrument (eg, Kansas City Cardiomyopathy Questionnaire, Minnesota Living with Heart Failure Questionnaire, Chronic Heart Failure Questionnaire)<br><br>**2a.2 Numerator Time Window (***The time period in which cases are eligible for inclusion in the numerator***):**<br>every visit during the measurement period<br><br>**2a.3 Numerator Details (***All information required to collect/calculate the numerator, including all codes, logic, and definitions***):**<br>Numerator Definitions/Instructions:<br>The NYHA functional classification reflects a subjective assessment by a healthcare provider of the severity of a patient's symptoms. Patients are assigned to one of the following 4 classes:<br>- Class I: patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain.<br>- Class II: patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea, or anginal pain.<br>- Class III: patients with marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnea, or anginal pain.<br>- Class IV: patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased.<br><br>Patient-reported health status as assessed by a structured survey/questionnaire instrument offers another, more patient-centric approach to assessing and summarizing the patient's overall heart failure symptom burden. These instruments serve as important constructs for delivering and evaluating heart failure care.<br><br>See attached for EHR Specifications.<br>For Claims/Administrative: Report CPT Category II Code (in development) XXXXF: Quantitative results of evaluation of both level of activity AND clinical symptoms documented | |
| **2a.4 Denominator Statement (***Brief, text description of the denominator - target population being measured***):**<br>All patient visits for those patients aged 18 years and older with a diagnosis of heart failure<br><br>**2a.5 Target population gender:** Female, Male<br>**2a.6 Target population age range:** 18 years of age and older<br><br>**2a.7 Denominator Time Window (***The time period in which cases are eligible for inclusion in the denominator***):**<br>12 consecutive months<br><br>**2a.8 Denominator Details (***All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions***):** | **2a-specs**<br>**C**☐<br>**P**☐<br>**M**☐<br>**N**☐ |

Comment [KP8]: **2a.** The measure is well defined and precisely specified so that it can be implemented consistently within and across organizations and allow for comparability. The required data elements are of high quality as defined by NQF's Health Information Technology Expert Panel (HITEP) .

See attached for EHR Specifications.
For Claims/Administrative: See coding tables attached for coding (ICD-9-CM, ICD-10-CM, SNOMED, CPT)

2a.9 **Denominator Exclusions (***Brief text description of exclusions from the target population***):**
Documentation of medical reason(s) for not evaluating both current level of activity and clinical symptoms (eg, severe cognitive or functional impairment)

2a.10 **Denominator Exclusion Details (***All information required to collect exclusions to the denominator, including all codes, logic, and definitions***):**
For Claims/Administrative: See coding tables attached for examples of medical reason exclusions.
Report CPT Category II Code (in development) XXXXF-1P

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

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

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

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

2a.18-19 **Type of Score:** Rate/proportion
2a.20 **Interpretation of Score:** Better quality = Higher score
2a.21 **Calculation Algorithm (***Describe the calculation of the measure as a flowchart or series of steps***):**
See attached for calculation algorithm

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

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

2a.24 **Data Source (***Check the source(s) for which the measure is specified and tested)*
Paper medical record/flow-sheet, Electronic administrative data/claims, Electronic clinical data, Electronic Health/Medical Record, Registry data

2a.25 **Data source/data collection instrument (***Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.***):**
This measure, in its previous specifications, is currently being used in the ACCF PINNACLE registry for the outpatient office setting.

2a.26-28 **Data source/data collection instrument reference web page URL or attachment:** URL www.pinnacleregistry.org

2a.29-31 **Data dictionary/code table web page URL or attachment:** Attachment NQF 0077_PCPI_HF-3_Symptom and Activity Assessment.pdf

2a.32-35 **Level of Measurement/Analysis** (*Check the level(s) for which the measure is specified and tested)*
Clinicians: Individual, Clinicians: Group

2a.36-37 **Care Settings (***Check the setting(s) for which the measure is specified and tested)*
Home, Ambulatory Care: Office, Ambulatory Care: Clinic, Nursing home (NH) /Skilled Nursing Facility (SNF), Ambulatory Care: Hospital Outpatient, Assisted Living, Group homes

2a.38-41 **Clinical Services** (*Healthcare services being measured, check all that apply*)
Clinicians: PA/NP/Advanced Practice Nurse, Clinicians: Physicians (MD/DO)

**Comment [k9]:** 11 Risk factors that influence outcomes should not be specified as exclusions.
12 Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

| TESTING/ANALYSIS | |
|---|---|
| **2b. Reliability testing**<br><br>2b.1 **Data/sample** *(description of data/sample and size)*: Please see additional information in sections 2, 4, 6, 7, 8, 9, 10 of the attached Measure Testing Summary.<br><br>2b.2 **Analytic Method** *(type of reliability & rationale, method for testing)*:<br>Please see additional information in sections 2, 4, 6, 7, 8, 9, 10 of the attached Measure Testing Summary.<br><br>2b.3 **Testing Results** *(reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:<br>Please see additional information in sections 2, 4, 6, 7, 8, 9, 10 of the attached Measure Testing Summary. | **2b**<br>C☐<br>P☐<br>M☐<br>N☐ |
| **2c. Validity testing**<br><br>2c.1 **Data/sample** *(description of data/sample and size)*:<br><br>2c.2 **Analytic Method** *(type of validity & rationale, method for testing)*:<br>All PCPI performance measures are assessed for content validity by expert work group members during the development process. Additional input on the content validity of draft measures is obtained through a 30-day public comment period and by also soliciting comments from a panel of consumer, purchaser, and patient representatives convened by the PCPI specifically for this purpose. All comments received are reviewed by the expert work group and the measures adjusted as needed. Other external review groups (eg, focus groups) may be convened if there are any remaining concerns related to the content validity of the measures.<br><br>2c.3 **Testing Results** *(statistical results, assessment of adequacy in the context of norms for the test conducted)*: | **2c**<br>C☐<br>P☐<br>M☐<br>N☐ |
| **2d. Exclusions Justified**<br><br>2d.1 **Summary of Evidence supporting exclusion(s):**<br>The PCPI support the consideration of exceptions or exclusions on a measure by measure basis. There must be clear rationale to permit an exception for a medical, patient, or system reason based on whether or not that reason is significant and occurs frequently enough. The PCPI also supports systematic review and analysis of each physician´s exceptions data to identify practice patterns and opportunities for quality improvement.<br><br>The Heart Failure Work Group agreed to include a medical reason exception so that clinicians can exclude patients for whom as assessment of symptom and activity may not be appropriate or feasible (eg, patients with severe cognitive or functional impairment).<br><br>2d.2 **Citations for Evidence:**<br><br>2d.3 **Data/sample** *(description of data/sample and size)*: Please see additional information in sections 1,3,5,7 of the attached Measure Testing Summary.<br><br>2d.4 **Analytic Method** *(type analysis & rationale)*:<br>Please see additional information in sections 1,3,5,7 of the attached Measure Testing Summary.<br><br>2d.5 **Testing Results** *(e.g., frequency, variability, sensitivity analyses)*:<br>Please see additional information in sections 1,3,5,7 of the attached Measure Testing Summary. | **2d**<br>C☐<br>P☐<br>M☐<br>N☐<br>NA☐ |
| **2e. Risk Adjustment for Outcomes/ Resource Use Measures**<br><br>2e.1 **Data/sample** *(description of data/sample and size)*: | **2e**<br>C☐<br>P☐<br>M☐ |

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



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

**Comment [k11]:** 8 Examples of reliability testing include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing may address the data items or final measure score.

**Comment [KP12]: 2c.** Validity testing demonstrates that the measure reflects the quality of care provided, adequately distinguishing good and poor quality. If face validity is the only validity addressed, it is systematically assessed.

**Comment [k13]:** 9 Examples of validity testing include, but are not limited to: determining if measure scores adequately distinguish between providers known to have good or poor quality assessed by another valid method; correlation of measure scores with another valid indicator of quality for the specific topic; ability of measure scores to predict scores on some other related valid measure; content validity for multi-item scales/tests. Face validity is a subjective assessment by experts of whether the measure reflects the quality of care (e.g., whether the proportion of patients with BP < 140/90 is a marker of quality). If face validity is the only validity addressed, it is systematically assessed (e.g., ratings by relevant stakeholders) and the measure is judged to represent quality care for the specific topic and that the measure focus is the most important aspect of quality for the specific topic.

**Comment [KP14]: 2d.** Clinically necessary measure exclusions are identified and must be:
•supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;
AND
•a clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;
AND
•precisely defined and specified:
–if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of ca ... [2]

**Comment [k15]:** 10 Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, sensitivity analyses with and without the exclusion, and variability of exclusions across providers.

**Comment [KP16]: 2e.** For outcome measures and other measures (e.g., resource use) when indicated:
•an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified and is based on patient clinical factors that influence the measured outcome (but not disparities in care) and are present at start of care;Error! Bookmark not defined. OR ... [3]

| | |
|---|---|
| **2e.2 Analytic Method** *(type of risk adjustment, analysis, & rationale)*: This is a process measure; risk adjustment is not indicated.<br><br>**2e.3 Testing Results** *(risk model performance metrics)*:<br><br>**2e.4 If outcome or resource use measure is not risk adjusted, provide rationale:** | N☐ NA☐ |
| **2f. Identification of Meaningful Differences in Performance**<br><br>**2f.1 Data/sample from Testing or Current Use** *(description of data/sample and size)*: Please see additional information in section 1 of the attached Measure Testing Summary.<br><br>**2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance** *(type of analysis & rationale)*:<br>Please see additional information in section 1 of the attached Measure Testing Summary.<br><br>**2f.3 Provide Measure Scores from Testing or Current Use** *(description of scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)*:<br>Please see additional information in section 1 of the attached Measure Testing Summary. | **2f**<br>C☐<br>P☐<br>M☐<br>N☐ |
| **2g. Comparability of Multiple Data Sources/Methods**<br><br>**2g.1 Data/sample** *(description of data/sample and size)*: Please see additional information in section 4 of the attached Measure Testing Summary.<br><br>**2g.2 Analytic Method** *(type of analysis & rationale)*:<br>Please see additional information in section 4 of the attached Measure Testing Summary.<br><br>**2g.3 Testing Results** *(e.g., correlation statistics, comparison of rankings)*:<br>Please see additional information in section 4 of the attached Measure Testing Summary. | **2g**<br>C☐<br>P☐<br>M☐<br>N☐<br>NA☐ |
| **2h. Disparities in Care**<br><br>**2h.1 If measure is stratified, provide stratified results** *(scores by stratified categories/cohorts)*: The measure is not stratified by patient groups or cohorts that could potentially be affected by disparities in care, nor are we aware of any existing research identifying disparities in care that may be relevant to this measure.<br><br>**2h.2 If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans:**<br>We are not aware of any relevant disparities that have been identified. | **2h**<br>C☐<br>P☐<br>M☐<br>N☐<br>NA☐ |
| **TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for** *Scientific Acceptability of Measure Properties?* | **2** |
| **Steering Committee: Overall, to what extent was the criterion,** *Scientific Acceptability of Measure Properties*, **met?**<br>**Rationale:** | *2*<br>C☐<br>P☐<br>M☐<br>N☐ |
| **3. USABILITY** | |
| Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (evaluation criteria) | **Eval Rating** |
| **3a. Meaningful, Understandable, and Useful Information**<br><br>**3a.1 Current Use:** In use<br><br>**3a.2 Use in a public reporting initiative (disclosure of performance results to the public at large)** (*If used* | **3a**<br>C☐<br>P☐<br>M☐<br>N☐ |

**Comment [k17]:** 13 Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care such as race, socioeconomic status, gender (e.g., poorer treatment outcomes of African American men with prostate cancer, inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than adjusting out differences.

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

**Comment [k19]:** 14 With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74% v. 75%) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall poor performance may not demonstrate much variability across providers.

**Comment [KP20]: 2g.** If multiple data sources/methods are allowed, there is demonstration they produce comparable results.

**Comment [KP21]: 2h.** If disparities in care have been identified, measure specifications, scoring, and analysis allow for identification of disparities through stratification of results (e.g., by race, ethnicity, socioeconomic status, gender);OR rationale/data justifies why stratification is not necessary or not feasible.

**Comment [KP22]: 3a**. Demonstration that information produced by the measure is meaningful, understandable, and useful to the intended audience(s) for both public reporting (e.g., focus group, cognitive testing) and informing quality improvement (e.g., quality improvement initiatives). An important outcome that may not have an identified improvement strategy still can be useful for informing quality improvement by identifying the need for and stimulating new approaches to improvement.

*in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). If not publicly reported, state the plans to achieve public reporting within 3 years*)**:**
This measure is not yet used in any public reporting initiative. The measure will, however, be eligible for inclusion in the CMS PQRS and other government programs in 2012 and would thus provide information about clinician participation to the public. The ACCF, AHA, and PCPI believe that the reporting of such participation information is a beneficial first step on a trajectory toward the public reporting of performance results, which is most appropriate after the measures are thoroughly tested and the reliability of the performance data has been validated. Continued NQF endorsement will facilitate our ongoing progress toward this public reporting objective.

3a.3 **If used in other programs/initiatives (***If used in quality improvement or other programs/initiatives, name of initiative(s), locations, Web page URL(s). If not used for QI, state the plans to achieve use for QI within 3 years*)**:**
All PCPI measures are suitable for use in quality improvement initiatives and are made freely available on the PCPI website and through the implementation efforts of medical specialty societies and other PCPI members. The PCPI strongly encourages the use of its measures in QI initiatives and seeks to provide information on such initiatives to PCPI members.

The American Heart Association's Get With The Guidelines®-Outpatient (GWTG-O) is a virtual performance improvement program that will improve adherence to evidence-based care in the outpatient setting, including specialist practices, general healthcare practices and health clinics. GWTG-Outpatient has had a long history of quality improvement for cardiovascular care. They have published 65 publications over the past 10 years. This program is designed to assist healthcare professionals in the outpatient setting to provide the best possible care to patients. This program collects a number of clinical measures for primary and secondary prevention. Clinical measure sets include those developed by American Heart Association, including those co-developed with other organizations, such as the American College of Cardiology Foundation and the American Medical Association, as well as other National Quality Forum endorsed measures.

Through this program, data is collected on clinical measures affecting a number of cardiovascular related conditions including, atrial fibrillation, coronary artery disease, heart failure, hypertension, diabetes, and preventative care. The primary analytical system used is Duke Clinical Research Institute. Get With The Guidelines®-Outpatient is a quality improvement program that can be utilized for Maintenance of Certification (MOC) with groups like American Board of Internal Medicine (ABIM) and American Board of Family Medicine (ABFM). ABIM has confirmed that the reports received from Get With The Guidelines-Outpatient can be utilized in completion of their Self-Directed Practice Improvement Module (PIM). The Self-Directed PIM provides one pathway for earning practice performance credit in ABIM's MOC program. This program includes several integral components: A preliminary Continuing Education (CE) course for the care team, data submission and reporting that is integrated with existing Electronic Health Records (EHRs)/health technology platforms, corresponding professional and provider education including webinars, online tools and resources, digital access to reference materials and videos through the Get With The Guidelines®-Outpatient website (http://outpatient.heart.org). The free continuing education activity titled, Outpatient Quality Improvement Focus, addresses the quality chasm and treatment gap, presents the benefits of quality improvement and identifies the steps necessary for implementation in the practice setting. This continuing education activity is certified for physicians, nurses and pharmacists.

The American College of Cardiology Foundation's Cardiology Practice Improvement Pathway (CPIP) uses clinical measure sets that are developed and specified by the American College of Cardiology Foundation with the American Heart Association and the American Medical Association's Physician Consortium for Performance Improvement for Hypertension, Stable Coronary Artery Disease, Heart Failure, and Atrial Fibrillation/Atrial Flutter. This program is intended as an approved quality improvement product that can be applied toward ABIM's Part IV practice performance requirement for Maintenance of Certification (ABIM AQI application submitted). They are in the process of creating a homepage on the Cardiosource.org homepage. The URL will be cardiosource.org/cpip. The web-based tool will be available after spring 2011. Through an online webinar hosted in November 2010, CPIP anticipates enrolling 50 - 100 practices during 2011 which will provide data from about 500-1,000 cardiologists. This ACCF initiative has contracted with the NY QIO: IPRO to analyze and scores based on thresholds. Of the 100 points needed to achieve recognition in the program, 70 come directly from clinical points such as the Heart Failure measures that

are being submitted to NQF for consideration. IPRO will audit 5% of practices who submit their data for recognition evaluation.

The American College of Cardiology Foundation's has an Performance Improvement program entitled "A New Era" which is an educational format approved for credit by the American Medical Association (AMA) and the American Nursing Credentialing Center. This continuing medical education program blends both quality improvement and educational methodologies to provide a high quality learning experience that impacts changes to practice. These activities are structured, long-term processes in which a healthcare professional learns about the heart failure specific performance metrics, uses metrics to retrospectively assess his practice, applies these metrics prospectively over a useful interval, and reevaluates his performance. As part of this process, clinicians set goals for change and engage in structured learning activities to improve their performance. As of December 6th, 2010:
- 425 clinicians have enrolled in A New ERA
- The data is generated from all but four states (Montana, New Hampshire, South Dakota, and Wyoming)
- 82% are physicians
- 90% agreed or strongly agreed that performance metric data were valuable
- 80% agreed or strongly agreed that performance metric data review would help them improve their practice
- No one has finished the program, as it takes several months to do so

In 2008, the American College of Cardiology Foundation launched the PINNACLE program (formerly known as the Improving Continuous Cardiac Care or IC3). This was the first, national, prospective, outpatient based cardiac QI registry in the US. While participation is voluntary, this registry collects a variety of longituditional patient data at the point of service, including patients' symptoms, vital signs, medication, and recent hospitalizations. Jointly developed ACCF/AHA/PCPI measures for Coronary Artery Disease, Heart Failure, and Atrial Fibrillation. Data collection is achieved in 2 ways for the practices: paper forms or practice's electronic medical record data collection systems. The primary analytical system used is St. Luke's Mid America Heart Institute. The ACCF registry, PINNACLE, pulls data from outpatient facilities via paper flowsheets or 14 EHR vendors. As of December 10, 2010, there are 47 practices collecting data at 200 sites with 276,000 unique patients representing 1 million documented encounters.

**Testing of Interpretability** (*Testing that demonstrates the results are understood by the potential users for public reporting and quality improvement*)
3a.4 **Data/sample** *(description of data/sample and size)*:

3a.5 **Methods** *(e.g., focus group, survey, QI project)*:

3a.6 **Results** *(qualitative and/or quantitative results and conclusions)*:

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

3b.1 **NQF # and Title of similar or related measures:**

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

**3b. Harmonization**
If this measure is related to measure(s) already endorsed by NQF (e.g., same topic, but different target population/setting/data source or different topic but same target population):
3b.2 **Are the measure specifications harmonized? If not, why?**

**3b**
C☐
P☐
M☐
N☐
NA☐

**3c. Distinctive or Additive Value**
3c.1 **Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures:**

**3c**
C☐
P☐
M☐
N☐

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



**Comment [KP23]: 3b.** The measure specifications are harmonized with other measures, and are applicable to multiple levels and settings.

**Comment [k24]:** 16 Measure harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., *influenza immunization* of patients in hospitals or nursing homes), or related measures for the same target population (e.g., eye exam and HbA1c for *patients with diabetes*), or definitions applicable to many measures (e.g., age designation for children) so that they are uniform or compatible, unless differences are dictated by the evidence. The dimensions of harmonization can include numerator, denominator, exclusions, and data source and collection instructions. The extent of harmonization depends on the relationship of the measures, the evidence for the specific measure focus, and differences in data sources.

**Comment [KP25]: 3c.** Review of existing endorsed measures and measure sets demonstrates that the measure provides a distinctive or additive value to existing NQF-endorsed measures (e.g., provides a more complete picture of quality for a particular condition or aspect of healthcare, is a more valid or efficient way to measure).

| | |
|---|---|
| 5.1 **If this measure is similar to measure(s) already endorsed by NQF (i.e., on the same topic and the same target population), Describe why it is a more valid or efficient way to measure quality:** | **NA☐** |
| **TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for** *Usability?* | **3** |
| **Steering Committee: Overall, to what extent was the criterion,** *Usability*, **met?**<br>**Rationale:** | **3**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |
| **4. FEASIBILITY** | |
| Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria) | **Eval Rating** |
| **4a. Data Generated as a Byproduct of Care Processes**<br><br>4a.1-2 **How are the data elements that are needed to compute measure scores generated?**<br>Data generated as byproduct of care processes during care delivery (Data are generated and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition), Coding/abstraction performed by someone other than person obtaining original information (E.g., DRG, ICD-9 codes on claims, chart abstraction for quality measure or registry) | **4a**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |
| **4b. Electronic Sources**<br><br>4b.1 **Are all the data elements available electronically?** (*elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims*)<br>Yes<br><br>4b.2 **If not, specify the near-term path to achieve electronic capture by most providers.** | **4b**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |
| **4c. Exclusions**<br><br>4c.1 **Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?**<br>No<br><br>4c.2 **If yes, provide justification.** | **4c**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐**<br>**NA☐** |
| **4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences**<br><br>4d.1 **Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results.**<br>Although we are not currently aware of any unintended consequences related to this measure, we plan through an active redesign of the PCPI website to facilitate the collection of information on unintended consequences from the users of PCPI measures. | **4d**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |
| **4e. Data Collection Strategy/Implementation**<br><br>4e.1 **Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing/frequency of data collection, patient confidentiality, time/cost of data collection, other feasibility/ implementation issues:**<br>Please see additional information in section 3 of the attached Measure Testing Summary.<br><br>4e.2 **Costs to implement the measure** (*costs of data collection, fees associated with proprietary measures*)**:**<br>Costs to implement the measure have not been calculated. | **4e**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |

**Comment [KP26]: 4a.** For clinical measures, required data elements are routinely generated concurrent with and as a byproduct of care processes during care delivery. (e.g., BP recorded in the electronic record, not abstracted from the record later by other personnel; patient self-assessment tools, e.g., depression scale; lab values, meds, etc.)

**Comment [KP27]: 4b.** The required data elements are available in electronic sources. If the required data are not in existing electronic sources, a credible, near-term path to electronic collection by most providers is specified and clinical data elements are specified for transition to the electronic health record.

**Comment [KP28]: 4c. Exclusions** should not require additional data sources beyond what is required for scoring the measure (e.g., numerator and denominator) unless justified as supporting measure validity.

**Comment [KP29]: 4d.** Susceptibility to inaccuracies, errors, or unintended consequences and the ability to audit the data items to detect such problems are identified.

**Comment [KP30]: 4e.** Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, etc.) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use).

| | |
|---|---|
| **4e.3 Evidence for costs:**<br><br>**4e.4 Business case documentation:** | |
| **TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Feasibility*?** | **4** |
| **Steering Committee: Overall, to what extent was the criterion, *Feasibility*, met?**<br>**Rationale:** | **4**<br>**C☐**<br>**P☐**<br>**M☐**<br>**N☐** |
| **RECOMMENDATION** | |
| (for NQF staff use) **Check if measure is untested and only eligible for time-limited endorsement.** | **Time-limited ☐** |
| **Steering Committee: Do you recommend for endorsement?**<br>**Comments:** | **Y☐**<br>**N☐**<br>**A☐** |

**CONTACT INFORMATION**

**Co.1 Measure Steward (Intellectual Property Owner)**
**Co.1 Organization**
American Medical Association, 515 N State St, Chicago, Illinois, 60654

**Co.2 Point of Contact**
Mark, Antman, DDS, MBA, mark.antman@ama-assn.org, 312-464-5056-

**Measure Developer If different from Measure Steward**
**Co.3 Organization**
American Medical Association, 515 N State St, Chicago, Illinois, 60654

**Co.4 Point of Contact**
Mark, Antman, DDS, MBA, mark.antman@ama-assn.org, 312-464-4469-

**Co.5 Submitter If different from Measure Steward POC**
Mark, Antman, DDS, MBA, mark.antman@ama-assn.org, 312-464-5056-, American Medical Association

**Co.6 Additional organizations that sponsored/participated in measure development**
American College of Cardiology Foundation/American Heart Association

**ADDITIONAL INFORMATION**

**Workgroup/Expert Panel involved in measure development**
**Ad.1 Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.**
Robert O. Bonow, MD, MACC, FAHA, FACP (Co-Chair) (cardiology)
Theodore G. Ganiats, MD (Co-Chair) (family medicine; measure methodology)
Craig T. Beam, CRE (patient representative)
Kathleen Blake, MD (cardiac electrophysiology)
Donald E. Casey, Jr., MD, MPH, MBA, FACP (internal medicine)
Sarah J. Goodlin, MD (geriatrics, palliative medicine)
Kathleen L. Grady, PhD, APN, FAAN, FAHA (cardiac surgery)
Randal F. Hundley, MD, FACC (cardiology, health plan representative )
Mariell Jessup, MD, FACC, FAHA, FESC (cardiology, heart failure)
Thomas E. Lynn, MD (family medicine, measure implementation)
Frederick A. Masoudi, MD, MSPH (cardiology)
David Nilasena MD, MSPH, MS (general preventive medicine, public health, measure implementation)

Paul D. Rockswold, MD, MPH (family medicine)
Ileana L. Piña, MD, FACC (cardiology, heart failure)
Lawrence B. Sadwin (patient representative)
Joanna D. Sikkema, MSN, ANP-BC, FAHA (cardiology)
Carrie A. Sincak, PharmD, BCPS (pharmacy)
John Spertus, MD, MPH (cardiology)
Patrick J. Torcson, MD, FACP, MMM (hospital medicine)
Elizabeth Torres, MD (internal medicine)
Mark V. Williams, MD, FHM (hospital medicine)
John B Wong, MD (internal medicine)

PCPI measures are developed through cross-specialty, multi-disciplinary work groups. All medical specialties and other health care professional disciplines participating in patient care for the clinical condition or topic under study must be equal contributors to the measure development process. In addition, the PCPI strives to include on its work groups individuals representing the perspectives of patients, consumers, private health plans, and employers. This broad-based approach to measure development ensures buy-in on the measures from all stakeholders and minimizes bias toward any individual specialty or stakeholder group. All work groups have at least two co-chairs who have relevant clinical and/or measure development expertise and who are responsible for ensuring that consensus is achieved and that all perspectives are voiced.

**Ad.2 If adapted, provide name of original measure:** Combination of two previously endorsed NQF measures - Heart Failure (HF): Assessment of Activity Level and Heart Failure (HF): Assessment of Clinical Symptoms of Volume Overload (Excess)
**Ad.3-5 If adapted, provide original specifications URL or attachment**

**Measure Developer/Steward Updates and Ongoing Maintenance**
**Ad.6 Year the measure was first released:** 2003
**Ad.7 Month and Year of most recent revision:** 12, 2010
**Ad.8 What is your frequency for review/update of this measure?** Every 3 years or as new evidence becomes available that materially affects the measures.
**Ad.9 When is the next scheduled review/update for this measure?** 12, 2013

**Ad.10 Copyright statement/disclaimers:** This Physician Performance Measurement Set (PPMS) and related data specifications were developed by the Physician Consortium for Performance Improvement® (the Consortium) including the American College of Cardiology (ACC), the American Heart Association (AHA) and the American Medical Association (AMA) to facilitate quality improvement activities by physicians. The performance measures contained in this PPMS are not clinical guidelines and do not establish a standard of medical care, and have not been tested for all potential applications. While copyrighted, they can be reproduced and distributed, without modification, for noncommercial purposes, e.g., use by health care providers in connection with their practices. Commercial use is defined as the sale, license, or distribution of the performance measures for commercial gain, or incorporation of the performance measures into a product or service that is sold, licensed or distributed for commercial gain. Commercial uses of the PPMS require a license agreement between the user and the AMA, (on behalf of the Consortium) or the ACC or the AHA. Neither the AMA, ACC, AHA, the Consortium nor its members shall be responsible for any use of this PPMS.

THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.



Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets. The AMA, the ACC, the AHA, the Consortium and its members disclaim all liability for use or accuracy of any Current Procedural Terminology (CPT®) or other coding contained in the specifications.



**Ad.11 -13 Additional Information web page URL or attachment:** Attachment Testing Summary HF NQF

| Final_2_10_2011-634329406847201955.pdf |
| --- |
| **Date of Submission** (*MM/DD/YY*)**:** 03/16/2011 |

**Page 3: [1] Comment [k5]** **Karen Pace** **10/5/2009 8:59:00 AM**

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

**Page 8: [2] Comment [KP14]** **Karen Pace** **10/5/2009 8:59:00 AM**

**2d.** Clinically necessary measure exclusions are identified and must be:

- supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;

AND

- a clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;

AND

- precisely defined and specified:
  - if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of cases excluded, exclusion rates by type of exclusion);

if patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that it strongly impacts performance on the measure and the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

**Page 8: [3] Comment [KP16]** **Karen Pace** **10/5/2009 8:59:00 AM**

**2e.** For outcome measures and other measures (e.g., resource use) when indicated:

- an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified and is based on patient clinical factors that influence the measured outcome (but not disparities in care) and are present at start of care;**Error! Bookmark not defined.** OR

rationale/data support no risk adjustment.

# AMA-PCPI Level I EHR Specifications

| Clinical Topic | Heart Failure |
|---|---|
| **Measure Title** | **Symptom and Activity Assessment** |
| **Measure #** | **PCPI HF-3 / NQF 0077 /** |
| **Measure Description** | Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented |
| **Measurement Period** | Twelve consecutive months |
| **Initial Patient Population** | Patient Age: Visits for patients aged 18 years and older before the start of the measurement period<br><br>Diagnosis Active: Visits where patient has a diagnosis of Heart Failure before or simultaneously to encounter date<br><br>Encounter: At least one visit with the physician, physician's assistant, or nurse practitioner during the measurement period |
| **Denominator Statement** | All patient visits for those patients aged 18 years and older with a diagnosis of heart failure |
| **Numerator Statement** | Patient visits with quantitative results of an evaluation of both current level of activity and clinical symptoms documented*<br><br>*Evaluation and quantitative results documented should include:<br>- documentation of New York Heart Association (NYHA) Class OR<br>- documentation of completion of a valid, reliable, disease-specific instrument (eg, Kansas City Cardiomyopathy Questionnaire, Minnesota Living with Heart Failure Questionnaire, Chronic Heart Failure Questionnaire) |
| **Denominator Exceptions** | Documentation of medical reason(s) for not evaluating both current level of activity and clinical symptoms (eg, severe cognitive or functional impairment, not indicated, contraindicated, other medical reason) |

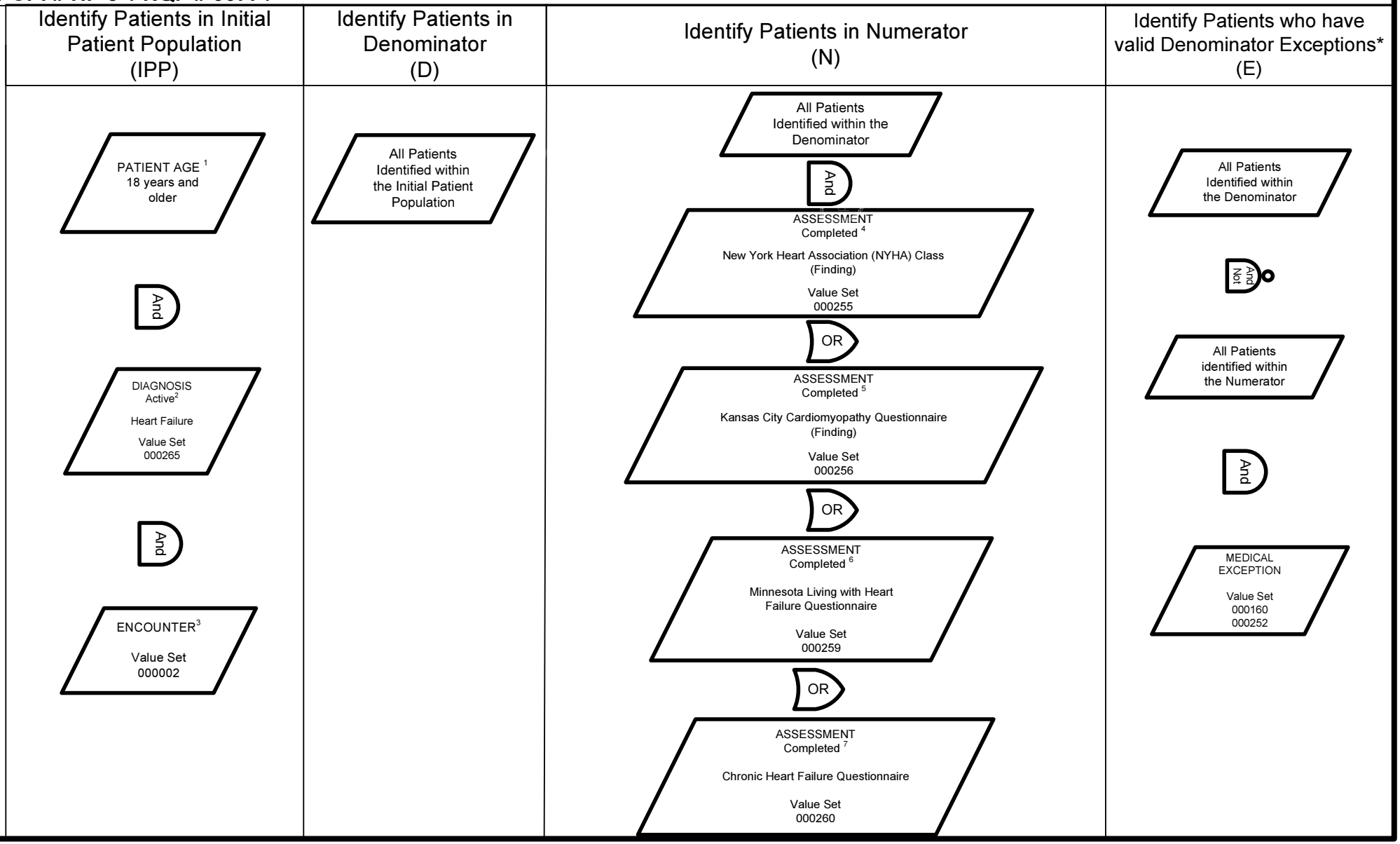
# AMA - PCPI Level I EHR Specifications

## Measure Logic for Heart Failure: Symptom and Activity Assessment

**Measure Description:** Percentage of patient visits for those patients aged 18 years and older with a diagnosis of heart failure with quantitative results of an evaluation of both current level of activity and clinical symptoms documented

**Measurement Period:** 12 consecutive months

**PCPI # HF-3 / NQF # 0077 /**




PARAMETER SPECIFICATIONS (Value Sets are found in the Coding Appendices):
IPP: [1] Patient Age: 18 years and older before the start of measurement period; [2] Diagnosis Active: before or simultaneously to encounter date; [3] Encounter: one visit during measurement period;
N: All in (N) occurring during the measurement period; [4 5 6 7] Assessment Completed-Listed assessments represent current available tools; [6 7] Assessment, completed- as demonstrated with value not empty;
E: All in (E) occurring before or simultaneously to the measurement period;

* Coded examples are NOT intended to be an exhaustive list. Exceptions will vary for each patient and situation.

**Basic Measure Calculation:**

$$\frac{(N)}{(D) - (E)} = \%$$

**The PCPI strongly recommends that exception rates also be computed and reported alongside performance rates as follows:**

**Exception Calculation:**

$$\frac{(E)}{(D)} = \%$$

**Exception Types:**
E= E1 (Medical Exceptions) + E2 (Patient Exceptions) + E3 (System Exceptions)
**For patients who have more than one valid exception, only one exception should be be counted when calculating the exception rate**

| Initial Patient Population (IPP) | Denominator (D) | Numerator (N) | Denominator Exceptions (E) |
|---|---|---|---|
| **Definition:** The initial patient population identifies the general group of patients that the performance measureis designed to address; usually focused on a specific clinical condition (e.g., coronary artery disease, asthma). For example, a patient aged 18 years and older with a diagnosis of CADwho has at least 2 Visits during the measurement period. | **Definition:** The denominator defines the specific group of patients for inclusion in a specific performance measure based on specific criteria (e.g., patient's age, diagnosis, prior MI). In some cases, the denominator may be I dentical to the initial patient population. | **Definition:** The numerator defines the group of patients in the denominator for whom a process or outcome of care occurs (e.g., flu vaccine received). | **Definition:** Denominator exceptions are the valid reasons why patients who are included in the denominator population did not receive a process or outcome of care (described in the numerator). Patients may have Denominator Exceptions for medical reasons (e.g., patient has an egg allergy so they did not receive flu vaccine); patient reasons (e.g., patient declined flu vaccine); or system reasons (e.g., patient did not receive flu Vaccine due to vaccine shortage). These cases are removed from the denominator population for the performance calculation, however the number of patients with valid exceptions should be calculated and reported. This group of patients constitutes the Denominator Exception reporting population – patients for whom the numerator was not achieved and a there is a valid Denominator Exception. |
| Find the patients who meet the Initial Patient Population criteria (IPP) | Find the patients who qualify for the denominator (D):<br>○ From the patients within the Patient Population criteria (IPP) select those people who meet Denominator selection criteria.<br><br>(In some cases the IPP and D are identical). | Find the patients who qualify for the Numerator (N):<br>○ From the patients within the Denominator (D) criteria, select those people who meet Numerator selection criteria.<br>○ Validate that the number of patients in the numerator is less than or equal to the number of patients in the denominator | From the patients who did not meet the Numerator criteria, determine if the patient meets any criteria for the Denominator Exception (E1 + E2+E3). If they meet any criteria, they should be removed from the Denominator for performance calculation. As a point of reference, these cases are removed from the denominator population for the performance calculation, however the number of patients with valid exceptions should be calculated and reported. |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_taxonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 402.01 | MAL HYP HRT DIS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 402.11 | BEN HYP HRT DIS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 402.91 | HYP HRT DIS NOS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.01 | MAL HYP HRT/REN DIS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.03 | MAL HYP HRT/REN DIS W HF&RF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.11 | BEN HYP HRT/REN DIS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.13 | BEN HYP HRT/REN DIS W HF&RF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.91 | HYP HRT/REN DIS W HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 404.93 | MAL HYP HRT/REN DIS W HF&RF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.0 | CHF NOS |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.1 | LEFT HEART FAILURE |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.20 | SYSTOLIC HRT FAILURE NOS |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.21 | AC SYSTOLIC HRT FAILURE |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.22 | CHR SYSTOLIC HRT FAILURE |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.23 | AC ON CHR SYSTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.30 | DIASTOLC HRT FAILURE NOS |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.31 | AC DIASTOLIC HRT FAILURE |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.32 | CHR DIASTOLIC HRT FAIL |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.33 | AC ON CHR DIASTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.40 | SYSTOLIC/DIASTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.41 | AC SYSTOLIC/DIASTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.42 | CHR SYSTOLIC/DIASTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.43 | AC/CHR SYSTOLIC/DIASTOLIC HF |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I9 | 428.9 | HEART FAILURE NOS |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I11.0 | Hypertensive heart disease with heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I13.0 | Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney disease, or unspecified chronic kidney disease |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I13.2 | Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease, or end stage renal disease |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.1 | Left ventricular failure/Cardiac asthma |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.20 | Unspecified systolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.21 | Acute systolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.22 | Chronic systolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.23 | Acute on chronic systolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.30 | Unspecified diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.31 | Acute diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.32 | Chronic diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.33 | Acute on chronic diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.40 | Unspecified combined systolic (congestive) and diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.41 | Acute combined systolic (congestive) and diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.42 | Chronic combined systolic (congestive) and diastolic (congestive) heart failure |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_ta xonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.43 | Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | I10 | I50.9 | Heart failure, unspecified / Biventricular (heart) failure NOS |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 364006 | acute left-sided heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 5053004 | cardiac insufficiency due to prosthesis (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 5148006 | hypertensive heart disease with congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 5375005 | chronic left-sided congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 10091002 | high output heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 10335000 | chronic right-sided heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 10633002 | acute congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 13839000 | Bernheim's syndrome (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 25544003 | low output heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 33644002 | postvalvulotomy syndrome (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 42343007 | congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 43736008 | rheumatic left ventricular failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 44313006 | right heart failure secondary to left heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 46113002 | hypertensive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 48447003 | chronic heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 56675007 | acute heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 60856006 | cardiac insufficiency following cardiac surgery (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 66989003 | chronic right-sided congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 74960003 | acute left-sided congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 77737007 | benign hypertensive heart disease with congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 80479009 | acute right-sided congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 82523003 | congestive rheumatic heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 83105008 | malignant hypertensive heart disease with congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 84114007 | heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 85232009 | left heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 88805009 | chronic congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 92506005 | biventricular congestive heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 90727007 | pleural effusion due to congestive heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 111283005 | chronic left-sided heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 128404006 | right heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 194767001 | benign hypertensive heart disease with congestive cardiac failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 194779001 | hypertensive heart and renal disease with (congestive) heart failure (disorder) |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_taxonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 194781004 | hypertensive heart and renal disease with both (congestive) heart failure and renal failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 195111005 | Decompensated cardiac failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 195112003 | compensated cardiac failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 195114002 | acute left ventricular failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 206586007 | congenital cardiac failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 233924009 | heart failure as a complication of care (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 277639002 | sepsis-associated right ventricular failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 314206003 | refractory heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 359617009 | acute right-sided heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 359620001 | acute right heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 367363000 | right ventricular failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 410431009 | cardiorespiratory failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 417996009 | systolic heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 418304008 | diastolic heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 424404003 | decompensated chronic heart failure (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 426012001 | right heart failure due to pulmonary hypertension (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 426263006 | congestive heart failure due to left ventricular systolic dysfunction (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 426611007 | congestive heart failure due to valvular disease (disorder) |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 441481004 | chronic systolic heart failure |
| 000265 | HF | 3 | IPP | Heart Failure | Diagnosis/Condition/Problem | SNM | 441530006 | chronic diastolic heart failure |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99201 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99202 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99203 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99204 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99205 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99212 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99213 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99214 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99215 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99241 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99242 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99243 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99244 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99245 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99304 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99305 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99306 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99307 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99308 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99309 | |
| 000002 | HF | 3 | IPP | Encounter -Nursing Facility | Encounter | CPT | 99310 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99324 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99325 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99326 | |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_ta xonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99327 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99328 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99334 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99335 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99336 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99337 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99341 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99342 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99343 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99344 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99345 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99347 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99348 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99349 | |
| 000002 | HF | 3 | IPP | Encounter-Outpatient | Encounter | CPT | 99350 | |
| 000255 | HF | 3 | N | New York Heart Association (NYHA) Class Finding | Assessment | SNM | 420300004 | New York Heart Association Classification - Class I |
| 000255 | HF | 3 | N | New York Heart Association (NYHA) Class Finding | Assessment | SNM | 421704003 | New York Heart Association Classification - Class II |
| 000255 | HF | 3 | N | New York Heart Association (NYHA) Class Finding | Assessment | SNM | 420913000 | New York Heart Association Classification - Class III |
| 000255 | HF | 3 | N | New York Heart Association (NYHA) Class Finding | Assessment | SNM | 422293003 | New York Heart Association Classification - Class IV |
| 000256 | HF | 3 | N | Kansas City Cardiomyopathy Questionnaire Finding | Assessment | SNM | 10190351000046103 | Kansas City Cardiomyopathy Questionaire score less than 25 (finding) |
| 000256 | HF | 3 | N | Kansas City Cardiomyopathy Questionnaire Finding | Assessment | SNM | 10190361000046100 | Kansas City Cardiomyopathy Questionaire score 25-49 (finding) |
| 000256 | HF | 3 | N | Kansas City Cardiomyopathy Questionnaire Finding | Assessment | SNM | 10190371000046107 | Kansas City Cardiomyopathy Questionaire score 50-74 (finding) |
| 000256 | HF | 3 | N | Kansas City Cardiomyopathy Questionnaire Finding | Assessment | SNM | 10190381000046109 | Kansas City Cardiomyopathy Questionaire score less than or equal to 75 (finding) |
| 000259 | HF | 3 | N | Minnesota Living with Heart Failure Questionaire score | Assessment | SNM | 10190401000046109 | Minnesota Living with Heart Failure Questionaire score (observable entity) |
| 000260 | HF | 3 | N | Chronic Heart Failure Questionaire score | Assessment | SNM | 10190421000046100 | Chronic Heart Failure Questionaire score (observable entity) |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21745 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21747 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21703 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21704 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 22855 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21990 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21738 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 22259 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 21815 | |
| 000160 | HF | 3 | E | Medical reason | Negation Rationale | HL7 | 22261 | |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 290.4 | Vascular dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 290.4 | Vascular dementia, uncomplicated |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 290.41 | Vascular dementia with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 290.42 | Vascular dementia with delusions |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 290.43 | Vascular dementia with depressed mood |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_taxonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 292.82 | Drug-induced persisting dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 294.1 | Dementia in conditions classified elsewhere without behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 294.11 | Dementia in conditions classified elsewhere with behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 330.1 | Cerebral lipidoses |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I9 | 330.2 | Cerebral degeneration in generalized lipidoses |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F01.5 | Vascular dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F01.50 | Vascular dementia without behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F01.51 | Vascular dementia with behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F02.8 | Dementia in other diseases classified elsewhere |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F02.80 | Dementia in other diseases classified elsewhere, without behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F02.81 | Dementia in other diseases classified elsewhere, with behavioral disturbance |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | I10 | F03 | Unspecified dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 52448006 | Dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 26929004 | Alzheimer's disease |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230269008 | Focal Alzheimer's disease |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 416780008 | Primary degenerative dementia of the Alzheimer type, presenile onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 6475002 | Primary degenerative dementia of the Alzheimer type, presenile onset, uncomplicated |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230265002 | Familial Alzheimer's disease of early onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230266001 | Non-familial Alzheimer's disease of early onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 65096006 | Primary degenerative dementia of the Alzheimer type, presenile onset, with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 54502004 | Primary degenerative dementia of the Alzheimer type, presenile onset, with delusions |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 10532003 | Primary degenerative dementia of the Alzheimer type, presenile onset, with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 416975007 | Primary degenerative dementia of the Alzheimer type, senile onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 66108005 | Primary degenerative dementia of the Alzheimer type, senile onset, uncomplicated |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230267005 | Familial Alzheimer's disease of late onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230268000 | Non-familial Alzheimer's disease of late onset |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 4817008 | Primary degenerative dementia of the Alzheimer type, senile onset, with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 55009008 | Primary degenerative dementia of the Alzheimer type, senile onset, with delusions |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 26852004 | Primary degenerative dementia of the Alzheimer type, senile onset, with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230280008 | Progressive aphasia in Alzheimer's disease |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_ta xonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 88339003 | Dementia arising in the senium AND/OR presenium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 70936005 | Multi-infarct dementia, uncomplicated |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 12348006 | Presenile dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 421023003 | Presenile dementia associated with AIDS |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191452002 | Presenile dementia with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191455000 | Presenile dementia with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191454001 | Presenile dementia with paranoia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191451009 | Uncomplicated presenile dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 268612007 | Senile and presenile organic psychotic conditions |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 15662003 | Senile dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 312991009 | Senile dementia of the Lewy body type |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191461002 | Senile dementia with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 371024007 | Senile dementia with delusion |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191457008 | Senile dementia with depressive or paranoid features |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191459006 | Senile dementia with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191458003 | Senile dementia with paranoia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 371026009 | Senile dementia with psychosis |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191449005 | Uncomplicated senile dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191519005 | Dementia associated with another disease |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 421529006 | Dementia associated with AIDS |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 420614009 | Organic dementia associated with AIDS |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 281004 | Dementia associated with alcoholism |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 425390006 | Dementia associated with Parkinson's Disease |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 429458009 | Dementia due to Creutzfeldt Jakob disease |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 442344002 | Dementia due to Huntington chorea |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230290000 | Epileptic dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230282000 | Traumatic encephalopathy |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 40425004 | Postconcussion syndrome |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230283005 | Punch drunk syndrome |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 278857002 | Dementia of frontal lobe type |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 9345005 | Dialysis dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191493005 | Drug-induced dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 32875003 | Inhalant-induced persisting dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 111480006 | Psychoactive substance-induced organic dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 59651006 | Sedative, hypnotic AND/OR anxiolytic-induced persisting dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 51928006 | General paresis - neurosyphilis |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 82959004 | Dementia paralytica juvenilis |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 62239001 | Parkinson-dementia complex of Guam |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230289009 | Patchy dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230288001 | Semantic dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 90099008 | Subcortical leukoencephalopathy |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 429998004 | Vascular dementia |

**AMA-PCPI Level I EHR Specifications**
**Heart Failure - Symptom and Activity Assessment (HF-3)**

| value_set_id | clinical_topic | topic_ indicator | measure_ component | standard_concept | standard_category | standard_ta xonomy | code | code_description |
|---|---|---|---|---|---|---|---|---|
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191464005 | Arteriosclerotic dementia with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191466007 | Arteriosclerotic dementia with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191465006 | Arteriosclerotic dementia with paranoia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 56267009 | Multi-infarct dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 10349009 | Multi-infarct dementia with delirium |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 25772007 | Multi-infarct dementia with delusions |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 14070001 | Multi-infarct dementia with depression |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230286002 | Subcortical vascular dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230287006 | Mixed cortical and subcortical vascular dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 191463004 | Uncomplicated arteriosclerotic dementia |
| 000252 | HF | 3 | E | Dementia | Diagnosis/Condition/Problem | SNM | 230285003 | Vascular dementia of acute onset |

## PCPI Performance Measure Testing Results – Heart Failure

The PCPI Testing Protocol outlines the comprehensive set of tests that should be conducted in different practice settings, using different data sources, for each performance measurement set. The PCPI recognizes that multiple testing projects will be needed to achieve the required test results for each measurement set. Moreover, testing and surveillance should be part of continued evaluation and updating of the measures.

This document presents results for the American College of Cardiology (ACC)/American Heart Association (AHA)/ PCPI Heart Failure Physician Performance Measures from the CMS PQRI program, the DOQ program, a peer-reviewed study, and the Cardio-HIT project.

### 1. Where are the measures used and what are the documented performance rates ?

Performance rates for individual measures are found to vary across the measure reporting and testing programs. This is expected, in that the performance rates are derived from different data sources, different practice sites, and variation in both the program implementation of the measures and approaches to implementation of the measures at individual practices or by the physicians in the practice sites included in the testing project. Variation in performance rates across practice sites suggests that the measure is able to differentiate among practices. In addition, no single relatively high value of performance for a measure should be used as an indication of that measure being "topped out", and hence no longer important or meaningful to measure.

| **PCPI #** | **NQF endorsed (#)** | **Measure** | **CMS PQRI[1]** (years, data source, performance 2007, 2008) | **Performance CMS DOQ-IT** (2008) (performance mean) | **Performance Baker[2] (EHR-only v. hybrid)** (2007) (performance) | **PCPI Cardio-HIT Incubator Group[3]** (EHRs) (2009) (performance) | **PINNACLE Registry Multi Month Comparison** (2010) (performance)[4] | **Performance Persell[5] Quality Improvement System** (surrogate testing) (2007-2009) |
|---|---|---|---|---|---|---|---|---|
| HF-1 | 0079 | Left ventricular function assessment | | **85.48%** | | **23.3%** | **64.7%** | |
| HF-2 | 0085 | Weight measurement | | **97.85%** | | **54.4%** | | |
| HF-3 | | Blood pressure measurement | | **98.92%** | | **81.7%** | | |
| HF-4 | 0078 | Assessment of Clinical Symptoms of Volume Overload (Excess) | | | | | **50.17%** | |
| HF-5 | 0077 | Assessment of Activity Level | | | | | | |
| HF-8 | 0083 | Beta-blocker therapy | PQRI# 8<br>2007: **52.29%** claims<br>2008: **48.66%** claims | **86.34%** | **90.9% - 92.8%** | | **88.81%** | **81.4% - 90.2%** |
| HF-9 | 0081 | ACEI/ARB therapy | PQRI# 5<br>2007: **49.26%** claims<br>2008: **37.20%** claims | **80.38%** | **93.9% - 98.7%** | | **79.48**% | **84.9% - 89.3%** |
| HF-10 | 0084 | Warfarin therapy – patients with afib | n/a | **67.03%** | **70.4% - 93.6%** | **77.8%** | | **66.7% - 85.3%** |

Performance ranges found in the PINNACLE project are as follows:

| Measure | 25th percentile | Median | 75th percentile | 90th percentile | Mean (St Dev) |
|---|---|---|---|---|---|
| LVEF HF-1 | 42.5% | 74.2% | 92.7% | 99.5% | 66.2% (+/– 31.4%) |
| ACE/ARB HF-9 | 73.9% | 81.9% | 90% | 92.7% | 81.8% (+/- 8.8%) |
| BB HF-8 | 77.3% | 89.5% | 94.4% | 98.9% | 85.5% (+/- 11.9%) |
| Assessment HF 4-5 | 0.3% | 72.6% | 93.3% | 100% | 53.7% (+/- 41.3%) |

**What are the reported exception rates?** (# patients with valid exceptions / ( # patients in denominator)

It is expected that reported exception rates will vary across measures and across the measure reporting and testing programs. This is primarily due to differences in the types of measure (eg, medications versus screening), data sources examined in testing, variation among the practice sites where the measures were implemented, and the types and number of reasons included in the measure specification (ie, medical reason, patient reason, and system reason). Any one value for a reported exception rate, in of itself, should not be interpreted as indication of gaming or patient selection behavior.

| | CMS PQRI 2007 | CMS PQRI 2008 | PCPI Cardio-HIT Incubator Group 2009 |
|---|---|---|---|
| Beta-blocker therapy | **2.82%** | **0.0%*** | **5.39%** |
| ACEI/ARB therapy | **5.81%** | **4.15%** | **6.17%** |
| Warfarin therapy | na | na | **5.26%** |

*Unable to calculate.

2. **Which tests have been carried out in which settings or data sources?** Tests of feasibility/ implementation, reliability, validity, and unintended consequences conducted in a variety of practice settings including (eg solo practices, large practices, academic practices, safety-net practices, single- and multi-specialty groups).

| Setting / Data Source | Medical Record (Gold Standard) (Paper or Electronic) | EHR Reporting | Registry | Administrative Data (single source) | Administrative Data (multiple sources) | Administrative Data Plus Clinical Data |
|---|---|---|---|---|---|---|
| **Solo Practice** | • Feasibility<br>• Inter-Rater Reliability | • Feasibility<br>• Parallel forms Reliability | | | | |
| **Specialty Practice** | • Feasibility<br>• Inter-Rater Reliability | | • Feasibility<br>• Parallel-forms Reliability | | | |
| **Safety-net practice** | | | | | | |
| **Academic Setting** | | | | | | |
| **Community Setting** | | | | | | |
| | | | | | | |

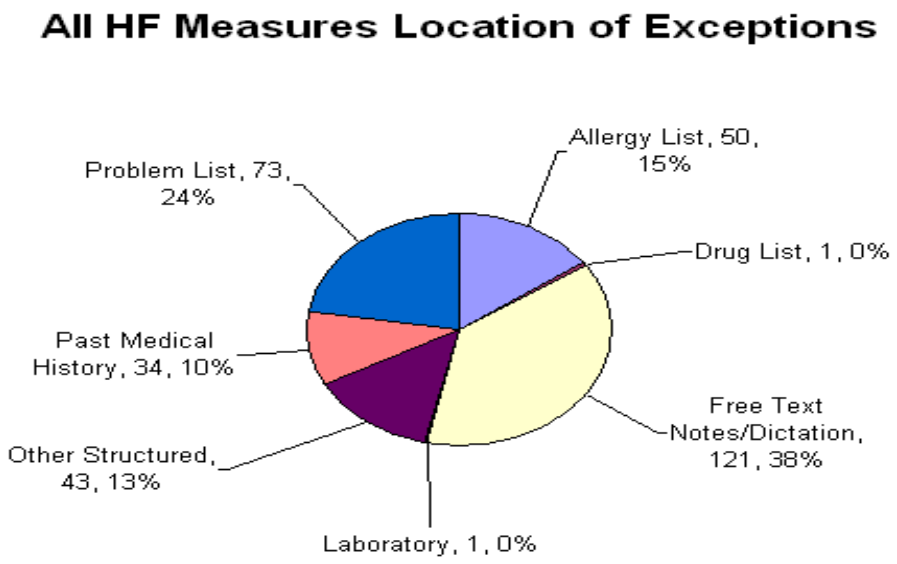
| | |
|---|---|
| **Feasibility Testing** | **3. How confident are we that practices can accurately collect and report these measures in a sustainable fashion?**<br><br>These measures have been tested and found to be generally feasible in EHR, paper, and claims data sources. Results from a study published by Persell, the AMA-sponsored Cardio-HIT project, and the CMS Doctors' Office Quality (DOQ) IT Project, as well as use in CMS's PGP Demonstration project and EHR demonstration project revealed that the heart failure measures are feasible to collect, as currently specified.<br><br>The feasibility of a PCPI performance measure/measure set refers to:<br>• Whether or not data are stored in a codified field<br>• Which clinical codes sets are utilized/available<br>• Where in the record the data are found<br>• Necessary clarifications needed to implement the measure<br>• Documentation of challenges to measure implementation<br>• The extent to which clinical practices are able to interpret measure definitions and technical specifications, and a) integrate them into existing workflows and health information systems to collect, manage, and manipulate data elements; b) compute performance measures; and c) generate performance reports within a reasonable time frame and budget.<br><br>**AMA PCPI Testing Project: Cardio-HIT**<br>Data Source<br>5 physician offices with 5 different EHRS, in use for at least 4 years at time of project<br>13,985 eligible patients<br>Methods<br>Translated integrated measure specifications to data fields within practice EHRs<br>Location of data (eg, problem list, medication summary) was recorded for data elements as well as whether or not the data was codified using a standard code set such as LOINC or SNOMED<br>• Exported de-identified patient data to a warehouse for measure calculation -- successfully completed by all sites.<br>• Location of exception data useful to inform EHR design, CDS design.<br>Results<br>• Each of the practice sites mapped the data elements required for each of the HF measures to their individual EHR and determined the additional system and work flow modifications required to integrate any additional data elements needed.<br>• Since each practice had a unique set of data fields, individual mapping of the data elements at the practice level was required. Each EHR required the development of additional data fields in order to achieve the functionality required to query and report on all data elements for all measures.<br>• An interface template was developed for each practice EHR which contains the unique set of data fields, validation requirements and acceptable values associated with ACC/AHA/PCPI measures. Using the interface template, each practice queried its EHR database to compile the data elements required for each measure. To assure consistent capture of data across a disperse set of EHR systems, the interface template identifies the submission of the prescribed coding system or standardized medical vocabulary as defined per the ACC/AHA/PCPI measure.<br>• It was not required that each data element be sent to the data warehouse using a specific coding system or standardized coding language but rather that each site would determine what specificity of data was feasible based on the current structure of data in their EHR. The consensus of the Cardio-HIT team was to |

provide industry accepted coded values (as identified by HITSP) if available. Examples include LOINC coding for lab tests, ICD for diagnoses and NDC for medications.

- In cases where the EHR was unable to support a medical vocabulary, an acceptable alternative was to substitute a "Y/N" value for those fields. For example, some sites were able to capture the prescription of a medication through the use of NDC codes but other sites determined that the use of Yes/No, medication prescribed (no CPT-II codes sent for medicaitons; CPT-II codes were sent for exceptions) was more feasible.

**Percent of HF Exceptions Found in Codified Data**

| | Problem List | Past Medical History | Free Text Notes/ Dictation | Other Structured Text | Allergy List | Drug List | Laboratory |
|---|---|---|---|---|---|---|---|
| **All 3 HF Measures: Beta Blocker, ACE/ARB, Warfarin** | **24%** | **10%** | **38%** | **13%** | **15%** | **0%** | **0%** |




**Baker, et al. – EHRs**

Observational study compared automated review of EHRs data with automated review followed by manual review of electronic notes for patients with apparent quality deficits (hybrid review).

- Performance based on automated review of EHRs data was similar to that based on hybrid review for the three drug-related measures studied, though performance was better in the hybrid review for all cases.
- For the warfarin measure, the hybrid review improved performance from 70.4% to 93.6%, primarily because contraindications to prescribing warfarin were not detected in the automated review.
- Failure to recognize contraindications to medications documented only in provider notes caused performance on medication-based quality measures to be underestimated.

**Doctor's Office Quality (DOQ) Project**

Data Source

National feasibility study, the CMS Doctors' Office Quality[6] (DOQ) Project

Methods

Reviewers assessed the feasibility of use of the ACC/AHA/PCPI measures in offices by performing retrospective audits of paper medical records and electronic health records

Results

The results revealed that 4 of the 6 measures studied from the HF set are feasible to collect, as currently specified. As part of the DOQ project, reviewers assessed the feasibility of use of the ACC/AHA/PCPI measures in offices by performing retrospective audits of paper medical records and electronic health records.

Limitations to feasibility were as follows:

DENOMINATOR IDENTIFICATION:

- ICD-9 coding was not sufficient in identifying patients with LVSD

NUMERATOR IDENTIFICATION:

- Left Ventricular Function Assessment, and Left Ventricular Function Testing
  - Site 1: Feasible with limitations.
    - LVSD data cannot be retrieved, but this functionality is expected with the new cardiology system being implemented
  - Site 2: Feasible
- Weight Measurement
  - Site 1: Feasible
  - Site 2: Feasible
- Blood Pressure Screening
  - Site 1: Feasible
  - Site 2: Feasible
- Beta Blocker Therapy
  - Site 1: Feasible with limitations.
    - The EHR currently stores results/interpretation as text only and not discrete values, and only indicates whether an order has been completed or not, but this additional functionality is expected with the new cardiology system being implemented
  - Site 2: not tested
- ACE inhibitor therapy
  - Site 1: Feasible with limitations.
    - The EHR currently stores results/interpretation as text only and not discrete values, and only indicates whether an order has been completed or not, but this additional functionality is expected with the new cardiology system being implemented
  - Site 2: not tested
- Warfarin Therapy for Patients with Afib
  - Site 1: Feasible
  - Site 2: Feasible

**CMS PQRI –2008 –Claims**

- Two HF measures, PQRI #5 and #8, were included in 2007 and 2008 PQRI..
- The rate of submissions accepted as appropriately coded were (2008):
  - Beta-blocker therapy for LVSD **77.30** %
    - **13.43** % of submissions were rejected due to an incorrect DX code
  - ACE inhibitor or ARB therapy for LVSD **67.57** %
    - **25.48** % of submissions were rejected due to an incorrect DX code
- Denominator mismatch rates (% rejected due to incorrect matching of quality code and denominator) were (2008):

- Beta-blocker therapy for LVSD **22.7** %
  - **13.43** % of submissions were rejected due to an incorrect DX code
- ACE inhibitor or ARB therapy for LVSD **32.43** %
  - **25.48** % of submissions were rejected due to an incorrect DX code

**Pinnacle Registry Multi Month Comparison**
Patient cohorts were created by analyzing one month of submissions to the PINNACLE registry. The first cohort is made up of encounters during October 2009 and the second cohort is made up of encounters during September 2010, made up of 22 and 23 practices, respectively, representing approximately 191 sites. There are 10,627 patient records in the first cohort and 11,692 patients in the second cohort, 83.9% of which are unique. Submissions to the registry are voluntary, and demonstrate feasibility by the number of records which were submitted.

**Reliability Testing**

**4. How confident are we that the measures accurately and consistently assess the performance of physicians providing the care assessed in the measure?**

Reliability is whether two abstractors, reviewing the same data from the same data source, would come to the same conclusion as to the patient meeting the measure, not meeting the measure, or qualifying as an exception.

**Baker, et al. – EHRs**
Inter-rater reliability was not conducted. Parallel forms reliability was conducted.
Baker, et al. did not calculate Kappa statistics for inter-rater reliability.

**Cardio-HIT – Multi-site EHRs**
Inter-rater reliability was not conducted. Parallel forms reliability was conducted.
Cardio-HIT did not calculate Kappa statistics for inter-rater reliability.

**Doctor's Office Quality Pilot Project**

Data Source:
2 practices sites with electronic health records
Methods
Abstractor responses were compared with "gold standard" responses determined by two abstractors familiar with the data definitions and who were responsible for abstractor training.
Results

| Measure | Doctor's Office Quality (DOQ) Project (agreement %, Trial 1, Trial 2) |
|---|---|
| LVF Assessment Recorded | 45 / 48 **94** %<br>4 / 4 **100** % |
| LVF Testing for Hospitalized Patients | 30 / 48 **63** %<br>4 / 4 **100** % |
| Visits with Weights Recorded | 449 / 464 **97** %<br>36 /455 **80** % |
| Visits with Blood Pressure Recorded | 452 / 464 **97** %<br>36 / 45 **80** % |
| Beta-Blocker Therapy (with LVSD) | 44 / 48 **92** %<br>4 / 4 **100** % |
| ACE Inhibitor Therapy (with LVSD) | 45 / 48 **94** %<br>4 / 4 **100** % |
| Warfarin Therapy (with afib) | 45 / 48 **94** %<br>4 / 4 **100** % |

Measure reliability can also be tested by taking two comparable, independent samples from a set of data, and determining if the performance in both samples is not statistically different.

**Pinnacle Registry Multi Month Comparison**

Using these assumptions, then, PINNACLE analysts established two patient cohorts separated by eleven months. The first cohort is from October 2009 and the second patient cohort is from September 2010. Analysis of the two cohorts shows that 83.9% of the patients in the sample are primary cases and thus the cohorts contain sufficient uniqueness to assess the reliability of measures with a test-retest methodology. Furthermore, the HF population in each cohort presents consistently with near identical clinical descriptors, including the distribution of LVEF values [severely reduced (9.5%, 8.9%), moderately reduced (11.7%, 4.8%), mildly reduced (12.5%, 12.1%), normal (66.2%, 67.9%)] and New York Heart Association class [Class I (39.1%, 35.6%), Class II (41.8%, 43.3%), Class III (17.3%, 19.0%), Class IV (1.8%, 2.1%)].

Once the cohorts were defined, performance was calculated at the individual physician level and the practice level. These rates were then aggregated to calculate the mean and standard deviation by cohort. Means were compared using the independent sample t-test to demonstrate that it is not possible to reject the null hypothesis at the .05 level.

Note: A 2 tailed t-test was conducted. Because the p value is greater than the α level there is no significant difference between the measures of the two cohorts. Practice is the unit of measure for the t test. Some N's are unequal because a practice was missing one or more data elements needed to calculate the performance measure.

| Measure | October 2009 Mean Performance (n, std dev) | September 2010 Mean Performance (n, std dev) | t | p | alpha | Statistically Different? |
|---|---|---|---|---|---|---|
| LVS Function Assessment | 63.14% (22, 0.315) | 64.70% (23, 0.316) | -0.166 | 0.869 | 0.05 | No (p>alpha) |
| ACE or ARB for patients with LVSD | 81.90% (21, 0.159) | 79.48% (21, 0.210) | 0.423 | 0.674 | 0.05 | No (p>alpha) |
| Assessment of Clinical Symptoms of Volume Overload (Excess) AND Assessment of Activity Level | 51.86% (22, 0.410) | 50.17% (23, 0.431) | 0.468 | 0.893 | 0.05 | No (p>alpha) |
| Beta blocker therapy | 83.86% (21, 0.156) | 88.81% (21, 0.113) | 1.180 | 0.245 | 0.05 | No (p>alpha) |

NOTE: n is measured at the level of practice sites

We interpret this finding to indicate the performance measure is reliable for the following reasons:

1. We have demonstrated that the two cohorts are largely unique, with 83.9% of the sample populations composed of non-overlapping patients.
2. We have also demonstrated that despite this uniqueness, the HF population attributes are highly consistent, as expected with large sample sizes and expected mean regression.
3. We have asserted based on experience and detailed registry analysis that absent major scientific change or aggressive PI or QI interventions, physician performance is both non-stochastic and consistent over time.
4. Thus, the fact that physician performance was statistically non-differentiable between the two cohorts indicates measure repeatability and hence reliability.

**Measure Exceptions Validated**

**(and specific exception reasons documented to inform measure maintenance)**

**5. Are exceptions clinically appropriate and consistently documented?**

Exceptions found for these measures were clinically appropriate.

**AMA PCPI Testing Project: Cardio-HIT**

Data Source

5 physician offices with 5 different EHRs, in use for at least 4 years at time of project
13,985 eligible patients

Methods

- Translated integrated measure specifications to data fields within practice EHRs
- Manual review of 5 EHRs compared to automated exporting of data to a data warehouse for measure calculation.
- Agreement was determined by comparing an exception that was reported to the data warehouse, which, upon manual abstraction of the EHRs, was confirmed to be appropriate when compared to an a priori list (predetermined list of medical, patient, or system reasons) developed by the clinical experts on the project team and review of clinical guidelines.

Results

- Reported exceptions were validated upon manual review of the medical record, against an a priori list generated by expert opinion. Measure exceptions were validated 95.32% of the time.
- Top medical exception reasons reported were:
  - Beta-blocker therapy: Lung/pulmonary contraindication was the exception reason for 31.04% of exceptions.
  - ACEI/ARB therapy: Renal contraindication was the medical exception reason for 66.36% of exceptions.
  - Warfarin therapy: Gastrointestinal tract contraindication was the exception reason for 20.41% of the exceptions.

| All Exceptions – Weighted Data Abstraction Sample | Medical Reason | Clinical Contraindication | Drug Allergy | Drug Interaction | Drug Intolerance |
|---|---|---|---|---|---|
| **Overall (n=306)** | 98.2% | 85.23% | 4.7% | 0.0% | 10.1% |
| **Beta Blocker Therapy (n=118)** | 98.0% | 74.7% | 3.5% | 0.0% | 21.8% |
| **ACE inhibitor/ARB Therapy (n=127)** | 99.5% | 89.8% | 5.9% | 0.00% | 4.2% |
| **Warfarin Therapy (n=61)** | 96.1% | 95.8% | 4.2% | 0.0% | 0.0% |

| **Beta Blocker Therapy Weighted Sample Data- All Exceptions** | | |
|---|---|---|
| Exceptions | Frequency (%) † | Frequency (n) |
| Adverse Reaction to Beta Blockers | 5.66% | 0.275 |
| Doc. of bradycardia/< 50 bpm/correlation for NOT Rx beta-blockers | 5.66% | 0.275 |
| End of Life Issues | 6.47% | 0.315 |
| Fatigue | 5.66% | 0.275 |
| Lung/Pulmonary | 58.78% | 2.860 |
| Other doc. by pract. for not prescribing therapy | 12.12% | 0.590 |
| Uncompensated CHF | 5.66% | 0.275 |

† Frequencies are given as a percent of the total number of Medical Exceptions for this measure
Data Source: OFI Abstraction Sample (manual review of EHR) where Non-HF (N = 4) have been removed

**ACE Inhibitor or ARB Therapy Weighted Sample Data- All Exceptions**

| Exceptions | Frequency (%) † | Frequency (n) |
|---|---|---|
| Adverse reaction to ACE inhibitor or ARB therapy | 3.61% | 0.987 |
| Allergy/intolerance (e.g., cough) to ACE inhibitor or ARB therapy | 7.38% | 2.018 |
| End of Life Issues | 3.72% | 1.016 |
| Hyperkalemia | 3.72% | 1.016 |
| Hypotension | 13.94% | 3.811 |
| Moderate or severe aortic stenosis subaortic stenosis | 1.26% | 0.343 |
| Other doc. by pract. for not prescribing therapy | 4.92% | 1.345 |
| Patient Refusal | 9.02% | 2.466 |
| Renal | 52.43% | 14.331 |

† Frequencies are given as a percent of the total number of Medical Exceptions for this measure

Data Source: OFI Abstraction Sample (manual review of EHR) where Non-HF (N = 4) have been removed

**Warfarin Therapy Weighted Sample Data- All Exceptions**

| Exceptions | Frequency (%) † | Frequency (n) |
|---|---|---|
| Bleeding Risk | 6.54% | 4.113 |
| Dementia/advanced dementia | 5.17% | 3.248 |
| End of life issues | 6.76% | 4.247 |
| GI Tract | 12.92% | 8.123 |
| Hematologic Abnormalities | 5.82% | 3.657 |
| Hepatic/Liver | 6.54% | 4.113 |
| Non-compliance with INR follow-up/medication management | 0.50% | 0.315 |
| Other doc. by pract. for not prescribing therapy | 23.62% | 14.847 |
| Other significant bleeding | 8.54% | 5.371 |
| Patient Refusal | 12.08% | 7.596 |
| Risk for Falls | 11.51% | 7.235 |

† Frequencies are given as a percent of the total number of Medical Exceptions for this measure

Data Source: OFI Abstraction Sample (manual review of EHR) where Non-HF (N = 4) have been removed

**Location and Codification of Exceptions**

| | Allergy List | | Drug List | |
|---|---|---|---|---|
| Measure | # Included | % Coded | # Included | % Coded |
| All HF Measures | 46 | 4.35% | 0 | 0.00% |
| Beta-blocker Therapy | 14 | 7.14% | 0 | 0.00% |
| ACE/ARB Therapy | 19 | 5.26% | 0 | 0.00% |
| Warfarin Therapy | 13 | 0.00% | 0 | 0.00% |

| | Free Text Notes/Dictation | | Laboratory | |
|---|---|---|---|---|
| Measure | # Included | % Coded | # Included | % Coded |
| All HF Measures | 126 | 11.11% | 1 | 0.00% |
| Beta-blocker Therapy | 39 | 12.82% | 0 | 0.00% |
| ACE/ARB Therapy | 46 | 6.52% | 1 | 0.00% |
| Warfarin Therapy | 41 | 14.63% | 0 | 0.00% |

| Measure | Other Structured | | Past Medical History | |
|---|---|---|---|---|
| | # Included | % Coded | # Included | % Coded |
| All HF Measures | 45 | 17.78% | 31 | 9.68% |
| Beta-blocker Therapy | 15 | 20.00% | 13 | 0.00% |
| ACE/ARB Therapy | 17 | 11.76% | 10 | 10.00% |
| Warfarin Therapy | 13 | 23.08% | 8 | 25.00% |

| Measure | Problem List | | TOTAL |
|---|---|---|---|
| | # Included | % Coded | |
| All HF Measures | 75 | 86.67% | 324 |
| Beta-blocker Therapy | 23 | 91.30% | 104 |
| ACE/ARB Therapy | 32 | 93.75% | 125 |
| Warfarin Therapy | 20 | 70.00% | 95 |

**Top Medical Reasons for Exceptions –Beta Blocker Therapy (Weighted Sample Data)**

| Medical Reason for Exception - Location | Frequency (%) † | Frequency (n) | Location Count | Percent Coded at Location |
|---|---|---|---|---|
| Adverse Reaction to Beta Blockers | 5.13% | 6.029 | | |
| Allergy List | | | 6.029 | 0.00% |
| Doc. of bradycardia/< 50 bpm/correlation for NOT Rx beta-blockers | 11.00% | 12.931 | | |
| Allergy List | | | 1.381 | 0.00% |
| Discharge Sumary | | | 1.381 | 0.00% |
| Free Notes | | | 5.522 | 0.00% |
| Past Medical History | | | 2.761 | 0.00% |
| Problem List | | | 1.887 | 100.00% |
| End of Life Issues | 1.17% | 1.381 | | |
| Free Text | | | 1.381 | 0.00% |
| Fatigue | 17.82% | 20.947 | | |
| Allergy List | | | 0.994 | 0.00% |
| Assessment List | | | 2.761 | 0.00% |
| Free Text | | | 8.403 | 0.00% |
| Past Medical History | | | 2.761 | 0.00% |
| Problem List | | | 4.648 | 70.30% |
| Stress Test | | | 1.381 | 0.00% |
| History of 2nd or 3rd Degree AV block without permanent pacemaker | 4.37% | 5.135 | | |
| Consultation | | | 0.994 | 0.00% |
| Free Text | | | 1.381 | 100.00% |
| Problem List | | | 2.761 | 100.00% |
| Hypotension | 17.84% | 20.967 | | |
| Allergy List | | | 1.381 | 0.00% |
| ED notes | | | 1.887 | 0.00% |
| Free Text | | | 12.177 | 0.00% |
| Past Medical History | | | 2.761 | 0.00% |
| Problem List | | | 2.761 | 100.00% |
| Lung/Pulmonary | 31.04% | 36.490 | | |
| Allergy List | | | 2.761 | 50.00% |
| Assessment List | | | 3.368 | 59.01% |
| Free Text | | | 8.642 | 34.72% |

| | | | | |
|---|---|---|---|---|
| Past Medical History | | | 9.277 | 0.00% |
| Problem List | | | 12.443 | 88.90% |
| Other doc. by pract. for not prescribing therapy | 10.03% | 11.790 | | |
| Allergy List | | | 5.135 | 0.00% |
| Assessment List | | | 0.994 | 100.00% |
| Free Text | | | 4.280 | 0.00% |
| Problem List | | | 1.381 | 100.00% |
| Uncompensated CHF | 1.61% | 1.887 | | |
| Discharge Summary | | | 0.506 | 0.00% |
| H&P | | | 1.381 | 0.00% |
| † Frequencies are given as a percent of the total number of Medical Exceptions for this measure | | | | |

**Top Medical Reasons for Exceptions – ACE Inhibitor or ARB Therapy (Weighted Sample Data)**

| Medical Reason for Exception - Location | Frequency (%) † | Frequency (n) | Location Count | Percent Coded at Location |
|---|---|---|---|---|
| Adverse reaction to ACE inhibitor or ARB therapy | 4.30% | 5.483 | | |
| Allergy List | | | 5.483 | 0.00% |
| Allergy/intolerance (e.g., cough) to ACE inhibitor or ARB therapy | 3.58% | 4.557 | | |
| Allergy List | | | 4.139 | 0.00% |
| Free Text | | | 0.418 | 0.00% |
| End of Life Issues | 1.02% | 1.302 | | |
| Free Text | | | 1.302 | 0.00% |
| Hyperkalemia | 9.61% | 12.241 | | |
| Allergy List | | | 1.995 | 0.00% |
| Discharge Summary | | | 1.344 | 0.00% |
| Free Text | | | 6.214 | 0.00% |
| Lab | | | 1.344 | 0.00% |
| Problem List | | | 1.344 | 100.00% |
| Hypotension | 8.34% | 10.622 | | |
| Discharge Summary | | | 1.344 | 0.00% |
| Free Text | | | 9.278 | 0.00% |
| Moderate or severe aortic stenosis subaortic stenosis | 1.89% | 2.413 | | |
| Past Medical History | | | 0.418 | 0.00% |
| Problem List | | | 1.995 | 67.38% |
| Other doc. by pract. for not prescribing therapy | 4.90% | 6.240 | | |
| Allergy List | | | 2.795 | 0.00% |
| Free Text | | | 3.445 | 0.00% |
| Renal | 66.36% | 84.542 | | |
| Allergy List | | | 4.758 | 28.25% |
| Assessment List | | | 11.172 | 0.00% |
| Discharge Summary | | | 2.832 | 22.98% |
| Free Text | | | 25.394 | 18.44% |
| H&P | | | 0.418 | 0.00% |
| Past Medical History | | | 10.167 | 13.22% |
| Problem List | | | 29.801 | 97.82% |
| † Frequencies are given as a percent of the total number of Medical Exceptions for this measure | | | | |

**Top Medical Reasons for Exceptions – ACE Inhibitor or Warfarin Therapy**

| Medical Reason for Exception - Location | Frequency (%) † | Frequency (n) | Location Count | Percent Coded at Location |
|---|---|---|---|---|
| Allergy or intolerance | 3.01% | 1.850 | | |
| Allergy List | | | 1.850 | 0.00% |
| Bleeding Risk | 6.30% | 3.871 | | |
| Free Text Notes/Dictation | | | 3.255 | 0.00% |
| Problem List | | | 0.617 | 0.00% |
| Dementia/advanced dementia | 2.64% | 1.624 | | |
| Free Text Notes/Dictation | | | 1.173 | 61.60% |
| Problem List | | | 0.451 | 0.00% |
| End of life issues | 1.91% | 1.173 | | |
| Free Text Notes/Dictation | | | 1.173 | 0.00% |
| GI Tract | 20.41% | 12.534 | | |
| Allergy List | | | 1.233 | 0.00% |
| Free Text Notes/Dictation | | | 5.058 | 37.48% |
| H&P | | | 0.451 | 0.00% |
| Past Medical History | | | 2.598 | 32.66% |
| Problem List | | | 3.195 | 73.44% |
| Hematologic Abnormalities | 20.13% | 12.362 | | |
| Assessment List | | | 3.394 | 0.00% |
| Free Text Notes/Dictation | | | 2.996 | 43.36% |
| H&P | | | 0.451 | 0.00% |
| Past Medical History | | | 0.451 | 0.00% |
| Problem List | | | 5.070 | 91.11% |
| Hepatic/Liver | 8.82% | 5.416 | | |
| Assessment List | | | 1.697 | 50.00% |
| Free Text Notes/Dictation | | | 0.849 | 0.00% |
| Problem List | | | 2.870 | 54.74% |
| Non-compliance with INR follow-up/medication management | 1.38% | 0.849 | | |
| Free Text Notes/Dictation | | | 0.849 | 0.00% |
| Other doc. by pract. for not prescribing therapy | 5.74% | 3.527 | | |
| Allergy List | | | 2.062 | 0.00% |
| Free Text Notes/Dictation | | | 1.465 | 0.00% |
| Other significant bleeding | 14.43% | 8.863 | | |
| Free Text Notes/Dictation | | | 7.239 | 6.22% |
| Past Medical History | | | 0.901 | 50.00% |
| Problem List | | | 0.723 | 100.00% |
| Risk for falls | 15.22% | 9.346 | | |
| Allergy List | | | 2.466 | 0.00% |
| Assessment List | | | 0.849 | 0.00% |
| Discharge Summary | | | 0.451 | 0.00% |
| Free Text Notes/Dictation | | | 5.130 | 16.54% |
| Past Medical History | | | 0.451 | 0.00% |

† Frequencies are given as a percent of the total number of Medical Exceptions for this measure

| Comparison of Data Sources<br><br>*Note: in these projects it is recommended to always compare the secondary data source to the current gold standard of manual abstraction of the medical record. | **6. Is measure collection from different data sources comparable? How does automated measure calculation compare to manual measure abstraction?**<br><br>**AMA PCPI Testing Project: Cardio-HIT**<br><br>Data Source<br>5 physician offices with 5 different EHRs, in use for at least 4 years at time of project<br>13,985 eligible patients<br><br>Methods<br>• Translated integrated measure specifications to data fields within practice EHRs<br>• Accuracy of heart failure data elements were verified by comparing automated measure abstraction and calculation against manual abstraction of an EHRs<br>• For three samples of patients, researchers completed a manual review of each patient's electronic chart<br>o Sample 1: patients who appeared to meet the numerator of the quality measure<br>o Sample 2: patients who appeared to fail the quality measure (did not meet numerator nor have exception)<br>o Sample 3: patients who appeared to not meet the numerator and have an exception to the quality measure<br>Results<br>Performance rates calculated automatically by the data warehouse compared to the rates of performance, opportunities for improvement and misclassification rates determined with manually abstracted data samples.<br><br>• Automated review alone: Overall performance for the three measures was 76.84% and varied among the measures:<br>▪ Beta-blocker therapy: 86.34%<br>▪ ACEI/ARB therapy: 80.38%<br>▪ Warfarin therapy: 67.03%<br>• Manual review alone: 22.35% of the cases were identified as failing to meet the measure (opportunities for improvement):<br>▪ Beta-blocker therapy: 9.30%<br>▪ ACEI/ARB therapy: 19.53%<br>▪ Warfarin therapy: 27.69%<br>• Discrepancies between performance measures based on EHRs automated review alone and those based on automated review plus manual review were due to two types of misclassification:<br>▪ identify performance among true, eligible patients<br>▪ failure to correctly exclude patients<br>• The overall rate of misclassification in the automatic calculation (identified from manual review) was 10.23% and varied across the measures:<br>▪ Beta-blocker therapy: 22.35%<br>▪ ACEI/ARB therapy: 14.34%<br>▪ Warfarin therapy: 4.54%<br><br>**7. If automated reporting identifies a patient as meeting the measure, what likelihood is there that manual review will validate that finding?**<br><br>Patient samples from populations identified by the automated reporting as Measure Mets, Opportunities for Improvement or Exceptions were validated upon manual review of the medical record for the six HF measures |
|---|---|

**Measure Mets**

- Automated review: 89.90% of patients met the numerator
  - Left ventricular function: 85.48%
  - Weight measurement: 97.85%
  - Blood pressure screening: 98.92%
  - Beta-blocker therapy: 86.34%
  - ACEI/ARB therapy: 80.38%
  - Warfarin therapy: 67.03%
- Upon manual validation of the patient sample: 82.88% met the numerator
  - Left ventricular function: 59.57%
  - Weight measurement: 88.35%
  - Blood pressure screening: 98.53%
  - Beta-blocker therapy: 95.82%
  - ACEI/ARB therapy: 75.52%
  - Warfarin therapy: 80.21%

**Opportunities for Improvement**

- Automated review: 9.96% of patients were opportunities for improvement
  - Left ventricular function: 14.52%
  - Weight measurement: 2.15%
  - Blood pressure screening: 1.08%
  - Beta-blocker therapy: 12.93%
  - ACEI/ARB therapy: 18.41%
  - Warfarin therapy: 31.24%
- Upon manual validation of the patient sample 44.14% of the opportunities for improvement remained opportunities for improvement
  - Left ventricular function: 65.12%
  - Weight measurement: 77.85%
  - Blood pressure screening: 59.63%
  - Beta-blocker therapy: 9.30%
  - ACEI/ARB therapy: 19.53%
  - Warfarin therapy: 27.69%
- Upon manual validation of the above patient sample
  - 34.31% were found to meet the numerator of the measure
  - 16.37% were found to have an exception
  - 5.18% were found to meet the numerator and had an exception

**Exceptions (only the 3 drug measures reported exceptions)**

- Automated review: 5.57% of patients had an exception
  - Beta-blocker therapy: 5.39%
  - ACEI/ARB therapy: 6.17%
  - Warfarin therapy: 5.26%
- Upon manual validation of the exception patient sample, the overall agreement rate was 94.05%
  - Beta-blocker therapy: 84.20%
  - ACEI/ARB therapy: 100.00%
  - Warfarin therapy: 95.66%

**8. Are the individual parts of the measure (numerator, denominator, exceptions) reliably calculated, as compared to the overall measure?**

Over the 3 drug measures analyzed, the agreement rates were:

- Numerator: 76.84%
- Denominator: 94.43%
- Exception: 66.19%
- Overall: 72.18%

**9. What proportion of patients that met the measure are correctly identified?**

Sensitivity: 74.75%

**10. What proportion of patients that do not meet the measure are correctly identified?**

**AMA PCPI Testing Project: Cardio-HIT**

Specificity: 70.10%

| **Patients Automatically Identified as Exceptions** | Agreement | | | |
|---|---|---|---|---|
| Measure | Mean Rate | S.E. | 95% C.I. | N |
| All HF Measures | 87.312% | 2.026% | 83.16%, 91.47% | 270 |
| Beta-blocker Therapy | 76.221% | 3.839% | 68.29%, 84.15% | 123 |
| ACE/ARB Therapy | 97.793% | 1.506% | 94.32%, 100% | 95 |
| Warfarin Therapy | 94.384% | 3.198% | 87.15%, 100% | 52 |

| **Patients Automatically Identified as Opportunities for Improvement** | Agreement | | | | |
|---|---|---|---|---|---|
| Measure | Mean Rate | S.E. | 95 % C.I. | N - num | N - den |
| All HF Measures | 44.14% | 2.17% | 39.80% ,48.48% | 232 | 526 |
| Left Ventricular Function | 65.12% | 3.32% | 58.38% ,71.87% | 134 | 206 |
| Weight Measurement | 77.85% | 7.20% | 62.25% ,93.46% | 26 | 33 |
| Blood Pressure Screening | 59.63% | 10.46% | 36.87% ,82.40% | 13 | 22 |
| Beta-blocker Therapy | 9.30% | 4.13% | 0.18% ,18.41% | 5 | 49 |
| ACE/ARB Therapy | 19.53% | 4.89% | 9.18% ,29.87% | 13 | 66 |
| Warfarin Therapy | 27.69% | 3.66% | 20.18% ,35.21% | 41 | 149 |

| **False Positive Opportunities for Improvement - Numerator Actually Met** | | | | | |
|---|---|---|---|---|---|
| Measure | Mean Rate | S.E. | 95% C.I. | N - num | N - den |
| All HF Measures | 34.31% | 2.07% | 30.16% ,38.46% | 180 | 526 |
| Left Ventricular Function | 34.88% | 3.32% | 28.13% ,41.62% | 72 | 206 |
| Weight Measurement | 7.53% | 4.57% | 0.00% ,18.00% | 3 | 33 |
| Blood Pressure Screening | 40.37% | 10.46 % | 17.605% ,63.13% | 9 | 22 |
| Beta-blocker Therapy | 59.06% | 7.00% | 44.34% ,73.79% | 29 | 49 |
| ACE/ARB Therapy | 31.88% | 5.75% | 19.86% ,43.91% | 21 | 66 |
| Warfarin Therapy | 31.47% | 3.80% | 23.68% ,39.26% | 47 | 149 |
| Left Ventricular Function | 34.31% | 2.07% | 30.16% ,38.46% | 180 | 526 |

| Measure | Mean Rate | S.E. | 95% C.I. | N - num | N - den |
|---|---|---|---|---|---|
| All HF Measures | 16.37% | 1.61% | 13.12% ,19.63% | 86 | 526 |
| Left Ventricular Function | 0.00% | 0.00% | 0.00%, 0.24% | 0 | 206 |
| Weight Measurement | 14.62% | 6.12% | 1.12% ,28.11% | 5 | 33 |
| Blood Pressure Screening | 0.00% | 0.00% | 0.00%, 2.27% | 0 | 22 |
| Beta-blocker Therapy | 9.30% | 4.13% | 0.18% ,18.41% | 5 | 49 |
| ACE/ARB Therapy | 34.25% | 5.85% | 22.02% ,46.49% | 23 | 66 |
| Warfarin Therapy | 36.30% | 3.94% | 28.25% ,44.35% | 54 | 149 |
| Left Ventricular Function | 16.37% | 1.61% | 13.12% ,19.63% | 86 | 526 |

**EHR "In Silo" Verification**

Note: initially this may be of limited usefulness until EHR functionality and use progresses

**11. Can EHR products reliably identify data elements and calculate these measures?**

A "dummy" data set of patient data will be provided to several EHR vendors along with EHR measure specifications. The vendors will use this test file to determine if their system can reliably calculate the measures based on intended documentation patterns.

This test has not yet been performed for this measure set.

**Predictive Validity**

**12. Does high performance on these measures lead to better patient outcomes?**

If the scientific evidence regarding the process of care is strong and widely accepted in the field, no formal evaluation of predictive validity is necessary. If the evidence is less strong, however, it is desirable to show that high performance leads to better patient outcomes.

This test has not yet been performed for this measure set. It should be noted that the Persell study shows that targeted QI projects can improve performance on the process measures.

**Unintended Consequences**

**13. Have monitoring and testing uncovered unexpected consequences of measurement?**

Testing should be performed for anticipated unintended consequences. Unanticipated unintended consequences should be monitored for on a long term basis as they may only occur in later stages and widespread adoption.
This test has not yet been performed for this measure set.

**Project Descriptions**

**Doctor's Office Quality Pilot Project**

Data was captured at two large physician practice groups who use two distinct EHR systems. The study population of group 1 was their fee-for service Medicare patients. The study population was all non-Medicare patients for Group 2. Once the DOQ clinical measures were developed, the practices were given technical specifications to use to capture the quality measures from their EHR system. Feasibility was assessed for all measures, and some measures were implemented.

**Baker, et al (EHRs-only v. hybrid)**

The objective of the study was to evaluate the accuracy of an automated system that used EHRs data and specifications from national organizations to measure quality of care for outpatients with heart failure. The research was designed as an observational study comparing success rates on quality measures based on automated review of EHRs data compared to automated review followed by manual review of physician notes for apparent failures (hybrid review).
A single site setting at an academic general internal medicine clinic with several years experience using a commercial EHRs. The researchers measured the left ventricular ejection fraction (LVEF), prescription of a beta blocker and an angiotensin converting enzyme

inhibitor (ACEI) for patients with left ventricular systolic dysfunction (LVEF < 0.40), and prescription of warfarin for patients with comorbid atrial fibrillation.
Adult patients, 517 records, with a qualifying ICD-9 diagnosis of heart failure and two or more clinic visits over the last 18 months. Success rates based only on automated review of EHRs data versus hybrid review were similar for LVEF measurement (94.6% vs. 97.3%) and beta blocker prescription (90.9% vs. 92.8%). However, success rates based on automated review of EHRs data were substantially lower than hybrid review for prescription of ACEI (93.9% vs. 98.6%) and warfarin for atrial fibrillation (70.4% vs. 93.5%).
The studied concluded that using EHRs data alone to measure quality remains problematic because exclusion criteria are often documented only in physicians' notes. EHRs vendors and national quality organizations should collaboratively develop systems to facilitate collection of the data required to routinely assess quality of care.

**Cardio-HIT Project**

The AMA received funding for Phase II of the Cardio-HIT project from the Agency for Healthcare Research and Quality (AHRQ). The AMA in collaboration with five (5) physician practice sites, the Iowa Foundation for Medical Care, and the National Committee for Quality Assurance, conducted a 2-year, observational study of exception reporting, building on the prior work under Cardio-HIT, a research collaborative of six (6) EHRs-enabled independent group practices that collected data and reported on nationally recognized physician performance measures for coronary artery disease and heart failure.
In Cardio-HIT Phase II, we: (1) empirically documented the prevalence and patterns of exception reporting in these measures; (2) assessed the feasibility and accuracy of exception reporting by validating a sample of reported exceptions against manual EHRs record review; and (3) analyzed and addressed stakeholder perspectives on exception reporting to refine existing principles in the design of physician performance measures.

**Pinnacle Registry Multi Month Comparison**

Two cohorts of patient encounters for patients aged 18 years and older with a diagnosis of heart failure were created by analyzing two distinct months of data submissions to the PINNACLE Registry™. The first cohort is made up of encounters during October 2009 and the second cohort is made up of encounters during September 2010, made up of 22 and 23 practices, respectively, representing approximately 191 sites. There are 10,627 patient records in the first cohort and 11,692 patients in the second cohort, 83.9% of which are unique.
*Overview*
Assessing the reliability of measures in large scale electronic databases being sourced by disparate EHR systems requires the application of novel techniques. While we expect coding for commonly used data elements to become more standardized in the medium to long term, the proliferation of EHR vendors and the predisposition toward practice-level customization precipitated by stimulus funding has only exacerbated the variation in electronic documentation in the short term. As a result, registries like PINNACLE must rely on a layered normalization and data quality approach to ensure reliability. PINNACLE presently applies four layers of quality control: 1) custom data mapping with multi-iteration, multi-stakeholder validation, 2) a formal Data Quality Report utility and tight XSD schema, and 3) continuous aggregate data quality review. In addition, for the purposes of this application, PINNACLE analysts have applied statistical sampling techniques (described below) to replicate at scale (tens of thousands of records) more traditional, small scale chart audits.

*Custom Data Mapping with Multi-Iteration, Multi-Stakeholder Validation*
The System Integration technology employed by the PINNACLE Registry is partially automatic and partially manual. The automatic portions of the process rely on standard data maps that correspond with the data structure of individual EHR products and versions. Relatively straightforward data elements, such as date of birth and heart failure diagnosis, are

generally structured consistently across practices with similar EHRs and can thus be identified and mapped automatically with software. More complex or less common elements, NYHA class for example, must be identified and mapped manually. This process relies on clinical and technical experts from the practice working with PINNACLE project managers and engineers to locate, and potentially normalize, the relevant data element. While potentially time consuming, this process ensures that multiple, highly-trained stakeholders (providers, practice technologists, PINNACLE project managers, engineers, and clinical staff) are reviewing and concurring on the accuracy of the data maps.
Furthermore, at multiple stages during the integration process practices and providers are reviewing both raw data pulls and calculated performance measures on test data extracts, full data extracts, and production extracts. Only after mapping is completed and the practice and PINNACLE staff have signed off on the accuracy of the data maps is the system placed into production.

*Data Quality Report utility and XSD Schema*
Production-level data extraction occurs on a massive scale. Initial production data extracts to generate baseline performance in the registry for even a single large practice can number in the hundreds of thousands of patient encounters. More routine monthly and quarterly extracts can generate thousands, or even tens of thousands, of encounters per practice. At that volume, human validation of inbound data quality is impossible. Instead PINNACLE deploys a two layered automated data quality validation process. The first layer is a data quality utility, called the DQR, which applies 65 unique tests to inbound data. These tests include valid range checks, parent child relationships, data completeness, and coding accuracy. The utility then generates a report alerting PINNACLE engineers, EHR vendors, or sometimes the practices themselves, to data errors. Depending on the scale of error, files may either be rejected in their entirety for revision and re-submittal or individual records may be segregated from the data load. After the file clears the DQR it must then pass a final XSD validation before being loaded into the data warehouse for production reporting.

*Continuous Aggregate Data Quality Review*
Once data has been calculated and aggregated at the practice and national level it then becomes possible and appropriate to reapply human scrutiny to data quality and measure reliability management. PINNACLE employs highly skilled professional assets, including the former chief data quality analyst for the 2010 United States Census, to be continuously reviewing and evaluating the accuracy of PINNACLE's reporting. In addition to evaluating data completeness, PINNACLE data quality resources also monitor inter- and intra-practice and provider, as well as inter-temporal, performance variability. PINNACLE is now of sufficient maturity that patterns in provider and practice level performance can be quickly interpreted to indentify 1) failures in data mapping, 2) failures in physician documentation (especially exclusion documentation), and 3) accurate assessments of performance.

*Statistical Sampling Techniques for Assessment of Measure Reliability*
Due to the scale of the PINNACLE Registry, as well as a series of outstanding methodological questions as to the value of EHR chart audits for validating information that was extracted from the same electronic source data, PINNACLE has not conducted such analyses. Instead, PINNACLE analysts use the scale of the registry itself to create smaller sample cohorts to assess the reliability and stability of measures. This approach requires certain assumptions, which we believe have prima facie validity and are confirmed from large scale analysis of the registry. The assumptions are as follows:
1. Physician performance is non-stochastic over time
2. Physician performance is statistically stable over modest time intervals absent exogenous shocks (i.e. major new scientific findings or direct performance improvement interventions)
3. At large patient population sizes, independent AF populations present consistently and

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| | normally<br><br>**Persell, et al (Quality Improvement System)**<br>This study was a time series analysis at a large internal medicine practice using a commercial EHR. Subjects included all adult patients eligible for each measure (range approximately 100-7500 patients). Measures included were modified versions of the national measures, which were updated to allow for extraction from the EHR and local workflow patterns. During the year before the intervention, performance improved significantly for 14 measures. Implementation of a multifaceted QI intervention using EHR tools to improve quality measurement and the accuracy and timeliness of clinician feedback improved performance and/or accelerated the rate of improvement for multiple measures simultaneously. For some measures clinical care changed, and for others, documentation was improved. |