

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 #: 1494 NQF Project: Cardiovascular Endorsement Maintenance 2010
MEASURE DESCRIPTIVE INFORMATION
De.1 Measure Title: Cardiac Rehabilitation/Secondary Prevention (CR) Program Measurement Set Related to Monitoring Response to Therapy and Documenting Program Effectiveness
De.2 Brief description of measure: Cardiac Rehabilitation/Secondary Prevention (CR) Program Measurement Set to assess the presence of a written policy in place that demonstrates program effectiveness
1.1-2 Type of Measure: Structure/management
De.3 If included in a composite or paired with another measure, please identify composite or paired measure This is one of a group of paired measures to promote and measure quality in cardiac rehabilitation/secondary prevention programs (CR) and is associated with two NQF endorsed measures related to referral to CR. During development of the referral measures and during that endorsement process, reviewers emphasized that it is important to assure quality CR programming and to encourage care coordination with other health care providers. Moreover, this set of measures both quantifies the infrastructure from which CR is provided and specifies aspects of care to incorporate into all relevant dimensions. This measure and its paired measures are being submitted to fill that role.
De.4 National Priority Partners Priority Area: Patient and family engagement, Care coordination
De.5 IOM Quality Domain: Effectiveness, Patient-centered
De.6 Consumer Care Need: Getting better, Staying healthy, Living with illness

CONDITIONS FOR CONSIDERATION BY NQF	
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. <i>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.</i>	
A.1 Do you attest that the measure steward holds intellectual property rights to the measure and the	

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

<p>right to use aspects of the measure owned by another entity (e.g., risk model, code set)? Yes</p> <p>A.2 Indicate if Proprietary Measure (as defined in measure steward agreement):</p> <p>A.3 Measure Steward Agreement: Agreement will be signed and submitted prior to or at the time of measure submission</p> <p>A.4 Measure Steward Agreement attached:</p>	<p>B</p> <p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>
<p>B. The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least every 3 years. Yes, information provided in contact section</p>	
<p>C. The intended use of the measure includes <u>both</u> public reporting <u>and</u> quality improvement.</p> <p>► Purpose: Public reporting, Internal quality improvement Accountability, Payment incentive, Accreditation</p>	<p>C</p> <p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>
<p>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.</p> <p>D.1 Testing: Yes, fully developed and tested</p> <p>D.2 Have NQF-endorsed measures been reviewed to identify if there are similar or related measures? Yes</p>	<p>D</p> <p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>
<p>(for NQF staff use) Have all conditions for consideration been met?</p> <p>Staff Notes to Steward (if submission returned):</p>	<p>Met</p> <p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>
<p>Staff Notes to Reviewers (issues or questions regarding any criteria):</p>	
<p>Staff Reviewer Name(s):</p>	

TAP/Workgroup Reviewer Name:	
Steering Committee Reviewer Name:	
1. IMPORTANCE TO MEASURE AND REPORT	
<p>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.</p> <p><i>Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria. (evaluation criteria)</i></p> <p>1a. High Impact</p>	Eval Rating
<p>(for NQF staff use) Specific NPP goal:</p>	
<p>1a.1 Demonstrated High Impact Aspect of Healthcare: Leading cause of morbidity/mortality</p> <p>1a.2</p> <p>1a.3 Summary of Evidence of High Impact: The National Quality Forum recently endorsed performance measures to assess referral to cardiac rehabilitation/secondary prevention programs (CR) from inpatient and outpatient settings (0642 and 0643). These measures were developed to correct disparities in underutilization of CR because CR has been shown to decrease morbidity and mortality following acute cardiac events, as well as improve functional capacity, cardiovascular risk factors, adherence with preventive medications, and psychosocial well-being. Moreover, CR programs promote care coordination by facilitating communication about secondary prevention issues between patients and their healthcare providers. It is vital that CR programs monitor patients' response to therapy and program effectiveness in order to provide appropriate individualized patient care and to promote continuous quality improvement. Continuous quality improvement relies on collecting information about individual response to therapy as well as analysis of aggregate data to assess program effectiveness. The recommendation is that each CR</p>	<p>1a</p> <p>C <input type="checkbox"/></p> <p>P <input type="checkbox"/></p> <p>M <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>

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).

program provides evidence of a standardized method to document individual patient outcomes on completion of the course of CR as defined on intake to the CR program which, in aggregate, will permit documentation of program effectiveness and quality improvement initiative success.

Outcome assessment and evaluation provides evidence of effectiveness of therapeutic interventions. According to a recent report of the National Heart, Lung, and Blood Institute, this enhances the migration of best practice to clinical practice, improves decision making and the quality of care provided and supports the optimal allocation of health care resources for all patients. (1)

The 2004 AACVPR Consensus Statement document suggests that “no single form [or] assessment protocol ... will fit the needs of all programs”. (2) The document gives examples of outcome measures for evaluating program effectiveness and communicating with other healthcare professionals providing the basis for a flexible “structural framework that will guide programs in the development of a standardized assessment protocols that fit their specific needs”. (2)

Initiation and completion of the prescribed course of CR, as defined on admission assessment, are keys to promoting both life-long behavior change as well as physiologic adaptations from regular exercise. Comprehensive CR programs include core components designed to address secondary prevention issues which can improve with patient self management. Reassessment of outcome measures after completion of CR can help programs assess their performance in each of these core components. It is anticipated that programs would assess different core component outcomes over time, using aggregate results to assess issues such as overall program performance, alternative approaches to programming, and programming in underserved populations such as minorities, women and the elderly.

1a.4 Citations for Evidence of High Impact: (1) Krumholz HM, Peterson ED, Ayanian JZ, Chin MH, DeBusk RF, Goldman L, Kiefe CI, Powe NR, Rumsfeld JS, Spertus JA, Weintraub WS. Report of the National Heart, Lung, and Blood Institute working group on outcomes research in cardiovascular disease. *Circulation*. 2005;111:3158-66.

(2) Sanderson BK, Southard D, Oldridge N. AACVPR consensus statement. Outcomes evaluation in cardiac rehabilitation/secondary prevention programs: improving patient care and program effectiveness. *J Cardiopulm Rehabil*. 2004;24:68-79.

1b. Opportunity for Improvement

1b.1 Benefits (improvements in quality) envisioned by use of this measure: This measure will assure that cardiac rehabilitation/secondary prevention (CR) programs have policies and procedures in place to assess and track patient centered outcomes such as enrollment in and completion of CR, as well as core component outcomes related to modifiable cardiovascular risk factors. The measure also requires that a CR program have a process to use these outcomes measures to document program effectiveness and to initiate quality improvement strategies.

This measure will assure that cardiac rehabilitation/secondary prevention programs have processes in place to identify high risk patients, monitor and treat them appropriately, and communicate with physicians and other health care providers to improve clinical outcomes. It is part of a set of paired measures related to CR, and those measures are designed to assure high quality coordinated secondary prevention programs for patients with cardiovascular disease

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

Although the American Heart Association Get With The Guidelines (GWTG) program included referral to cardiac rehabilitation as a standard element, it did not require communication between referring clinicians, patients and accepting programs to facilitate enrollment. Mazzini evaluated enrollment to CR resulting from institutions' use of GWTG in Boston. From a total of 714 patients admitted during an 18 month period with MI and discharged home, 55% were referred to CR but only 19% actually enrolled in CR. This performance measure includes language to encourage CR programs to track enrollment in and completion of program and is designed to encourage performance improvement projects to enhance enrollment in and completion of CR by underserved populations. (1)

Since publication of that study, multiple CR programs have recognized the need to track enrollment rates

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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.

and ten have reported their unpublished data to the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) Clinical Applications Committee. Enrollment rates in these programs range from 24% to 71%, demonstrating that there is significant variation and an opportunity to close a performance gap. (2,3) Interestingly, it appears that participation in a formal CR Registry, such as the Wisconsin Cardiac Rehabilitation Outcomes Registry (WiCORE) also promotes improved enrollment rates. During the period July 1, 2008 to December 31, 2010, collective data from this registry demonstrated that 76% of patients referred to CR were actually enrolled in CR programs participating in WiCORE. (4)

This measure was also written to encourage performance improvement related modifiable cardiovascular risk factors in CR programs.

Considerable variation exists among CR programs related to collection of outcomes measures related to modifiable cardiovascular risk factors. Unpublished data from WiCORE (Wisconsin Cardiac Rehabilitation Outcomes Registry) demonstrates that there is wide variation in the reporting of clinical variables, even in programs certified by AACVPR. For example, of programs entering at least 100 records in the registry, the percentage of discharge records with documented LDL values ranges from 6-90%. Program size appears to be independent of the completeness of documentation, as large programs (greater than 200 referrals per year) are as likely to have incomplete records as small programs (less than 100 referrals per year). Completeness of documentation of lipids at program discharge also appears to be independent of program duration, frequency of OCR visits, or certification status. (4) Although the American Heart Association Get With The Guidelines (GWTG) program included referral to cardiac rehabilitation as a standard element, it did not require communication between referring clinicians, patients and accepting programs to facilitate enrollment. Mazzini evaluated enrollment to CR resulting from institutions' use of the GWTG program in Boston. From a total of 714 patients admitted during an 18 month period with MI and discharged home, 55% were referred to CR but only 19% actually enrolled in CR. (1) This performance measure includes language to encourage CR programs to track enrollment in and completion of program and is designed to encourage performance improvement projects to enhance enrollment in and completion of CR by underserved populations.

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1b.3 Citations for data on performance gap:

(1) Mazzini MJ, Stevens GR, Whalen D et al. Effect of an American Heart Association Get With the Guidelines Program-Based Clinical Pathway on Referral and Enrollment Into Cardiac Rehabilitation After Acute Myocardial Infarction. *Am J Cardiol* 2008;101:1084-1087.

(2) Personal Communication from Elizabeth Dole, Chair, AACVPR Clinical Applications Committee

(3) [http://www.aacvpr.org/Portals/0/referral%20spreadsheet\(1\).xls](http://www.aacvpr.org/Portals/0/referral%20spreadsheet(1).xls)

(4) Personal communication from Mark Vitcenda, WiCORE coordinator, <http://wiscpr.wisc.edu/Content.aspx?cmspageid=474>

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

Recent articles have demonstrated that there is marked geographical variation in the utilization of cardiac

rehabilitation services, with the highest utilization in the northern midwestern states. (1) In addition, enrollment in CR is lowest in the elderly, women, and minorities. These disparities have been static, with similar results seen in both analysis of Medicare data from 1997 as well as 2003 Centers for Disease Control and Prevention data. (1,2)

However, there appears to be no significant disparity related to use of this measure by CR professionals for performance improvement within their programs. During a recent national AACVPR survey of CR Program Directors (n=173) who treat patients in a variety of settings ranging from rural to suburban to urban, 96.0% reported that they monitor response to therapy and document program effectiveness to guide their clinical practices. (3)

1b.5 Citations for data on Disparities:

(1) Suaya JA, Shepard DS, Normand LT, Ades PA, Prottas J, Stason WB. "Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery." *Circulation* 2007;116:1653-1662.

(2) Centers for Disease Control and Prevention. "Receipt of cardiac rehabilitation services among heart attack survivors: 19 states and the District of Columbia, 2001." *Morb Mortal Weekly rep Surveill Summary* 2003;52:1072-1075.

(3) http://www.surveymonkey.com/sr.aspx?sm=S51wfjUseS_2f8aUeiTSmYPJGpIpYqAKypO9ARlij_2bWXQ_3d

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*): While not an outcome, this measure is designed to help health care groups identify potentially correctable and actionable "upstream" sources of suboptimal care. This measure quantifies specific aspects of care and is designed to capture all relevant dimensions of CR care. Continuous quality improvement relies on collecting information about individual response to therapy as well as analysis of aggregate data to assess program effectiveness. The recommendation is that each CR program provides evidence of a standardized method to document individual patient outcomes on completion of the course of CR as defined on intake to the CR program which, in aggregate, will permit documentation of program effectiveness and quality improvement initiative success.

1c.2-3. Type of Evidence: Other Consensus statements

1c.4 Summary of Evidence (*as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome*):

The consensus statement from the AACVPR and the scientific statement from the American Heart Association and AACVPR listed below were written to help CR professionals provide high quality CR programs and these documents clearly support this performance measure. The provisions of this measure support safe, effective CR programming. There is a consistent body of strong evidence to show that CR decreases mortality and improves modifiable CVD risk factors, adherence to preventive medications, and quality of life, and this measure was developed to assure continuous quality improvement efforts related to enrollment in, completion of, and analysis of patient and program outcomes in cardiac rehabilitation.

Relevant statements from AACVPR consensus statement and AHA/AACVPR scientific statement:

AACVPR Consensus Statement. Outcomes Evaluation in Cardiac Rehabilitation/Secondary Prevention Programs: Improving Patient Care and Program Effectiveness (1)

Cardiac rehabilitation programs need to establish a standardized method of data collection and maintain effective communication with other health care providers who also provide care for the referred patient.

Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update: a scientific statement from the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee, the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition, Physical Activity and Metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation (2)

The assessment and evaluation of at least 1 of the expected outcome measures is recommended for each of the core cardiac rehabilitation components.

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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., mammography) or measures for multiple care processes that affect a single outcome.

<p>1c.5 Rating of strength/quality of evidence (also provide narrative description of the rating and by whom): No class of recommendation or level of evidence given</p> <p>1c.6 Method for rating evidence: The strong consistency of evidence shows that potential benefits to patients from performance improvement clearly outweigh potential harms of assessing outcomes.</p> <p>1c.7 Summary of Controversy/Contradictory Evidence: None</p> <p>1c.8 Citations for Evidence (other than guidelines): (1) Sanderson BK, Southard D, Oldridge N. AACVPR consensus statement. Outcomes evaluation in cardiac rehabilitation/secondary prevention programs: improving patient care and program effectiveness. J Cardiopulm Rehabil. 2004;24:68-79. (2) Balady G WM, Ades PA, Bittner V, Comoss P, Foody J, Franklin B, Sanderson B, Southard D. Core components of cardiac rehabilitation/secondary prevention programs: 2007 update. J Cardiopulm Rehabil. 27:121-129.</p> <p>1c.9 Quote the Specific guideline recommendation (including guideline number and/or page number): Refer to 1c.4</p> <p>1c.10 Clinical Practice Guideline Citation: Refer to 1c.4</p> <p>1c.11 National Guideline Clearinghouse or other URL: N/A</p> <p>1c.12 Rating of strength of recommendation (also provide narrative description of the rating and by whom): N/A</p> <p>1c.13 Method for rating strength of recommendation (If different from USPSTF system, also describe rating and how it relates to USPSTF): N/A</p> <p>1c.14 Rationale for using this guideline over others: This guideline was the major source document for development of this performance measure because it provides guidance about target goals for the majority of the modifiable cardiovascular risk factors. The core components of cardiac rehabilitation are based on this guideline.</p>	
<p>TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for Importance to Measure and Report?</p>	1
<p>Steering Committee: Was the threshold criterion, Importance to Measure and Report, met? Rationale:</p>	1 Y <input type="checkbox"/> N <input type="checkbox"/>
2. SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES	
<p>Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. (evaluation criteria)</p>	Eval Rating
2a. MEASURE SPECIFICATIONS	
<p>S.1 Do you have a web page where current detailed measure specifications can be obtained? S.2 If yes, provide web page URL:</p>	
<p>2a. Precisely Specified</p>	
<p>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): The cardiac rehabilitation/secondary prevention (CR) program is monitoring a response to therapy and the program effectiveness has a written policy in place to capture all 4 of the below elements: 1. Document the percentage of patients for whom the CR program has received a formal referral request who actually enroll in</p>	2a-specs C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>

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.

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.

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).

<p>the program.</p> <p>2. Document for each patient a standardized plan to assess completion of the prescribed course of CR as defined on entrance to the program.</p> <p>3. Document for each patient a standardized plan to assess outcome measurements at the initiation and again at the completion of CR, including at least one outcome measure for the core program components as outlined in the Proposed AACVPR/ACCF/AHA Performance Measure: Individualized Assessment and Evaluation of Modifiable Cardiovascular Risk Factors, Development of Individualized Interventions, and Communication With Other Health Care Providers.</p> <p>4. Describe the program's methodology to document program effectiveness and initiate quality improvement strategies.</p>
<p>2a.2 Numerator Time Window (<i>The time period in which cases are eligible for inclusion in the numerator</i>): Per reporting year</p>
<p>2a.3 Numerator Details (<i>All information required to collect/calculate the numerator, including all codes, logic, and definitions</i>):</p>
<p>2a.4 Denominator Statement (<i>Brief, text description of the denominator - target population being measured</i>): All CR programs</p>
<p>2a.5 Target population gender: Female, Male</p>
<p>2a.6 Target population age range: 18 years or older</p>
<p>2a.7 Denominator Time Window (<i>The time period in which cases are eligible for inclusion in the denominator</i>): Per reporting year</p>
<p>2a.8 Denominator Details (<i>All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions</i>): None</p>
<p>2a.9 Denominator Exclusions (<i>Brief text description of exclusions from the target population</i>): None</p>
<p>2a.10 Denominator Exclusion Details (<i>All information required to collect exclusions to the denominator, including all codes, logic, and definitions</i>): None</p>
<p>2a.11 Stratification Details/Variables (<i>All information required to stratify the measure including the stratification variables, all codes, logic, and definitions</i>): No</p>
<p>2a.12-13 Risk Adjustment Type: No risk adjustment necessary</p>
<p>2a.14 Risk Adjustment Methodology/Variables (<i>List risk adjustment variables and describe conceptual models, statistical models, or other aspects of model or method</i>):</p>
<p>2a.15-17 Detailed risk model available Web page URL or attachment:</p>
<p>2a.18-19 Type of Score: Categorical</p>
<p>2a.20 Interpretation of Score: Better quality = Score within a defined interval</p>
<p>2a.21 Calculation Algorithm (<i>Describe the calculation of the measure as a flowchart or series of steps</i>): N/A</p>
<p>2a.22 Describe the method for discriminating performance (<i>e.g., significance testing</i>): N/A</p>
<p>2a.23 Sampling (Survey) Methodology <i>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):</i> N/A</p>

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

2a.24 Data Source (*Check the source(s) for which the measure is specified and tested*)
 Paper medical record/flow-sheet, Organizational policies and procedures

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.*):
 Program policies and procedures and documentation of compliance using departmental records.
 In addition, a National Outcomes Data Registry is being established by AACVPR to use in future to collect and analyze this data.

2a.26-28 Data source/data collection instrument reference web page URL or attachment: URL Refer to page 11 in the Certification application for definitions and explanations related to documentation currently required. These requirements may be modified after additional testing of this measure. Cardiac Certification application: http://www.aacvpr.org/Portals/0/CardioCert_ScreenShots.pdf

2a.29-31 Data dictionary/code table web page URL or attachment: URL Refer to page 11 in the Certification application for definitions and explanations related to documentation currently required. These requirements may be modified after additional testing of this measure. Cardiac Certification application: http://www.aacvpr.org/Portals/0/CardioCert_ScreenShots.pdf

2a.32-35 Level of Measurement/Analysis (*Check the level(s) for which the measure is specified and tested*)
 Clinicians: Group, Facility/Agency, Integrated delivery system, Program: Other Interdisciplinary teams of cardiac rehabilitation/secondary prevention professionals providing CR services

2a.36-37 Care Settings (*Check the setting(s) for which the measure is specified and tested*)
 Ambulatory Care: Office, Ambulatory Care: Clinic, Ambulatory Care: Hospital Outpatient, Rehabilitation Facility, Other Community Healthcare

2a.38-41 Clinical Services (*Healthcare services being measured, check all that apply*)
 Clinicians: Dietician/Nutritional professional, Clinicians: Nurses, Clinicians: PA/NP/Advanced Practice Nurse, Clinicians: Physicians (MD/DO), Clinicians: Psychologist/LCSW, Clinicians: PT/OT/Speech, Other exercise specialists

TESTING/ANALYSIS

2b. Reliability testing

2b.1 Data/sample (*description of data/sample and size*): Because the AACVPR cardiac rehabilitation program certification and recertification process requires documentation that programs are compliant with this measure, inter-rater reliability testing was performed for a subset of records submitted for program certification in 2010. AACVPR certification is a process that helps programs improve care and meet essential standards via application of performance measures and guidelines. Currently, there are 1,147 AACVPR certified programs in the United States. In 2009, specific steps were taken to improve Inter-Rater Reliability related to the certification and recertification process. These steps were as follows: : 1) Pre-examination training for all examiners completed by interactive webinar, 2) Limit response of examiners to pre-approved text unless approved by committee chair, 3) Applications not meeting full certification requirements must be presented to and approved by the Chair prior to determination being finalized, 4) Examiners will use the period between first and second review of applications (April to July) to remediate with applicants who have outstanding issues, 5) Chairs will be issued fewer applications for review to enable them to support the examiners in their remediation efforts, 6) the Appeals Task Force will be required to complete the interactive webinar-based examiner training prior to reviewing and scoring appeals, 7) Chairs will meet after the examination process to abstract and review a limited sampling from each examiner to ensure consistency in scoring and standards interpretation, 8) identified inter-examiner variances will be addressed on an individual basis by the respective chair (Certification or Recertification) who will provide direct one on one or group (if indicated) training regarding the observed variances, and said variance will be highlighted in the next annual training program, and 9) considerable time and expense have and will continue to be applied to the annual review of application questions to refine the validity and clarity of each component of the application. Subsequently, during 2010, a subset of 30 program applications was tested for inter-rater reliability.

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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.

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

Inter-Rater Reliability: Inter-rater reliability testing was performed by 6 experienced AACVPR certification reviewers on a total of 30 records submitted for program certification in 2010. Each reviewer re-reviewed each application to determine acceptance or denial of certification, blinded to the original decision and name of the facility. In addition, no reviewer was given a program he/she had initially reviewed. Certification is an all or none phenomenon - there must be evidence for compliance with all measures in order for a program to be certified. Therefore, agreement about whether to certify or deny also confirms agreement about compliance with this particular measure related to program safety. Cohen's Unweighted Kappa testing was used to determine degree of inter-rater agreement.

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

INTER-RATER RELIABILITY: 24 of the applications that were initially approved for certification were also approved on second review (approved/approved). 4 of the applications that were initially denied certification were also denied on second review (denied/denied). 2 of the applications that were initially approved for certification were scored as denied second review (approved/denied). There were no applications that were initially denied that were then scored as approved on second review (denied/approved). Analysis for Cohen's Unweighted Kappa was performed and revealed a coefficient of 0.7619. According to the scale for agreement established by Landis and Koch in 1977 (0.41 - 0.60 "moderate agreement"; 0.61 - 0.80 "substantial agreement"; and 0.81 - 1.00 "almost perfect agreement") a kappa coefficient of 0.7619 places the inter-rater reliability of the measure set firmly in the high end of "substantial agreement".

2c. Validity testing

2c.1 Data/sample (*description of data/sample and size*): **CONTENT/CONTEXT VALIDITY:** To determine the content/context validity of the measures, a Delphi like peer review process was utilized. An explicit part of all ACCF/AHA performance measures development is conducting a formal 30 day public comment period. Reviewers were asked to provide comments on the document on the basis of the rating form and guide shown on page 1432 at [Http://content.onlinejacc.org/cgi/reprint/j.jacc.2007.04.033v1.pdf](http://content.onlinejacc.org/cgi/reprint/j.jacc.2007.04.033v1.pdf) Content/context validity of the measures were established by virtue of the specialized expertise of the Performance Measures Work Group members who were involved in identifying and drafting the performance measures (all leaders and experts in the field of cardiac rehabilitation as chosen by the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR), the American College of Cardiology (ACC), and the American Heart Association (AHA), as well as the structured discussions that the work group conducted, in addition to rigorous peer review and public comment.

FACE VALIDITY: In addition to determination by the sample experts listed for content and context validity, face validity was also determined through rigorous peer review. A panel of 15 experts in the field of cardiac rehabilitation was contacted through an online survey tool and asked to rate each measure according to the following statement: "In my expert opinion, the details of the measure xx describe high quality safety standards for a cardiac rehabilitation program." Reviewers were aware that they were rating the performance measure set, but were blinded to information that these results were to be made available to NQF as part of the performance measure submission process. A four-point forced choice likert scale was utilized to eliminate the possibility of a reviewer scoring "not applicable" as it was believed that experts at this level should have an opinion as to the standards applicable to each measure (4 strongly agree; 3 agree; 2 disagree; 1strongly disagree).

Face validity testing was done in 2010, using a standardized survey available at http://www.surveymonkey.com/sr.aspx?sm=pi5SWz5AviYwauEfNS_2fIBUoS7c5T_2fdgL79YwqnS7NIE_3d.

PREDICTIVE VALIDITY: The Wisconsin Cardiac Rehabilitation Outcomes Registry (WiCORE) is an online database designed to collect individual patient-level data collected at cardiac rehabilitation admission and discharge from diverse programs from around the country (not limited to the state of Wisconsin). It is the most extensive, non-commercial, patient-level database of cardiac rehabilitation outcomes available in the United States. WiCORE is the product of collaboration between WISCPHR (The Wisconsin Society for Cardiovascular and Pulmonary Health and Rehabilitation), HDSP (The State of Wisconsin Heart Disease and Stroke Prevention Program), and DoIT (The University of Wisconsin Department of Information Technology, Office of Collaborative Applications). WiCORE currently has data on over 17,000 patients, with discharge data available for over 12,000 of these records.

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.

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

CONTENT/CONTEXT VALIDITY: Determined by structured work group discussions, in addition to rigorous peer review and public comment. The steps in the analytic method were: 1. Formation of the Development Committee: This measure was developed by the AACVPR/ACC/AHA Cardiac Rehabilitation/Secondary Prevention Performance Measures Writing Committee, which was initially convened in 2005. The Writing Committee was composed of appointed representatives from the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR), the American College of Cardiology (ACC), and the American Heart Association (AHA), including past and current representatives of the ACC Task Force on Performance Measures, past and current presidents of AACVPR, and clinicians with expertise in general clinical cardiology, heart failure, cardiovascular disease, and cardiac rehabilitation. 2. Identification of Potential Factors for Inclusion: The Writing Committee initially identified 39 factors from various practice guidelines and other reports that were considered potential performance measures for the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets based on level of evidence and strength of recommendation from the peer reviewed literature. These 39 measures were then evaluated for inclusion in the initial draft of the measures according to guidelines established by the ACC/AHA Task Force on Performance Measures. Those measures that were deemed to be most evidence-based, interpretable, actionable, clinically meaningful, valid, reliable, and feasible were included in the final performance measurement sets. Once these measures were identified, the Writing Committee then discussed and refined, over a series of months, the definition, content, and other details of each of the selected measures. 3. Scoring of the Factors/Expert Opinion: Utilizing the ACC/AHA system for classification of recommendations and level of evidence for guidelines and clinical recommendations system those measures that were deemed to be most evidence-based, interpretable, actionable, clinically meaningful, valid, reliable, and feasible were included in the final performance measurement sets. 4. Number of Factors Kept: 20 factors were included in the final draft of the performance measures. 5. Refinement of the PM by the Development Committee: After the measures were identified, the Writing Committee discussed and refined these measures, developing the definition, content, and other details during 2006. 6. Public Comment Period/Peer Review: The measurement set underwent a public comment period from December 11, 2006 until January 11, 2007. Peer reviewers were asked to provide comments on the document on the basis of a Likert like rating form assessing the evidence-base for each measure, the interpretability for practitioners of each measure, if the measure were actionable for practitioners, and design elements of each measure including the denominator and numerator. 7. Further Refinement: After the public comment period the measures were identified, the Writing Committee discussed and refined these measures, developing the definition, content, and other details during 2007. The final measure set was approved by the American Association of Cardiovascular and Pulmonary Rehabilitation Board of Directors in May, 2007, the American College of Cardiology Foundation Board of Trustees in April 2007, and by the American Heart Association Science Advisory and Coordinating Committee in April 2007. The performance measure set was also reviewed via AHA and ACC processes as well as by the AACVPR Document Oversight Committee. 8. Peer Review Publication/Endorsement: The final document was submitted to the Journal of the American College of Cardiology (the official journal of the American College of Cardiology), the Journal of Cardiopulmonary Rehabilitation and Prevention (the official journal of the American Association of Cardiovascular and Pulmonary Rehabilitation) and Circulation (the official journal of the American Heart Association) for peer review and publication.

FACE VALIDITY: The face validity of the measure set was determined via a four step process. 1. Standards of Care: Determined through the process listed for content and context validity. It was determined by this process that this measure has a high face validity, because the standards in this measure are well established as standards of care, including individualized patient assessment for cardiovascular risk and communication with other health care providers about adverse events. 2. Public Comment Period: Face validity assessment is available for this measure, based on data from the public comment period of the AACVPR/ACCF/AHA performance measures that were published in 2007. 3. Testing Via Certification/ Re-certification Process: Currently, compliance with this measure is determined through the AACVPR Program Certification/ Re-certification. AACVPR has developed a national Outcomes Data Registry which allows correlation of compliance with this measure to meaningful clinical outcomes. 4. Peer Review: Face validity was also determined through rigorous peer review. A panel of 15 experts in the field of cardiac rehabilitation were contacted through an online survey tool and were asked to rate each measure according to the following statement: "In my expert opinion, the details of the measure xx describe high quality safety standards for a cardiac rehabilitation program." Reviewers were aware that they were rating the performance measure set, but were blinded to information that these results were to be made available to

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.

NQF as part of the performance measure submission process. A four-point forced choice Likert scale was utilized to eliminate the possibility of a reviewer scoring "not applicable" as it was believed that experts at this level should have an opinion as to the standards applicable to each measure (4 strongly agree; 3 agree; 2 disagree; 1strongly disagree).

PREDICTIVE VALIDITY: An analysis has been conducted to examine programmatic structures, utilization and outcomes of the WICORE dataset. To test the predictive ability of the measure set, outcomes for patients enrolled in cardiac rehabilitation programs that were AACVPR-certified (approximately 40% of the programs currently enrolled in WICORE) have been compared to outcomes for patient enrolled in programs that were not AACVPR certified in the WICORE dataset. The analysis tests the hypothesis that AACVPR-certified programs had superior outcomes compared to those that were not certified. Outcomes included in the analysis will be: changes in lifestyle habits (exercise, nutrition, smoking); treatment with and adherence to preventive medications; functional capacity; quality of life; psychological health; re-hospitalization rates; recurrent CVD events and mortality. All data would be adjusted for potential confounders (age, gender, co-morbid conditions and program characteristics.).

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

CONTENT/CONTEXT VALIDITY: In May 2007 the final peer reviewed publication of the performance measures document was approved by the American Association of Cardiovascular and Pulmonary Rehabilitation Board of Directors, the American College of Cardiology Foundation Board of Trustees and by the American Heart Association Science Advisory and Coordinating Committee. Additionally, the publication was endorsed by the American College of Chest Physicians, American College of Sports Medicine, American Physical Therapy Association, Canadian Association of Cardiac Rehabilitation, European Association for Cardiovascular Prevention and Rehabilitation, Inter-American Heart Foundation, National Association of Clinical Nurse Specialists, Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons. The final document was published the Journal of the American College of Cardiology (the official journal of the American College of Cardiology), the Journal of Cardiopulmonary Rehabilitation and Prevention (the official journal of the American Association of Cardiovascular and Pulmonary Rehabilitation) and Circulation (the official journal of the American Heart Association) in September 2007. The document can be found at <http://content.onlinejacc.org/cgi/reprint/j.jacc.2007.04.033v1.pdf>.

FACE VALIDITY: A panel of 15 experts in the field of cardiac rehabilitation was contacted through an online survey tool and asked to rate each measure according to the following statement: "In my expert opinion, the details of the measure xx describe high quality safety standards for a cardiac rehabilitation program." Reviewers were aware that they were rating the performance measure set, but were blinded to information that these results were to be made available to NQF as part of the performance measure submission process. A four-point forced choice Likert scale was utilized to eliminate the possibility of a reviewer scoring "not applicable" as it was believed that experts at this level should have an opinion as to the standards applicable to each measure (4 strongly agree; 3 agree; 2 disagree; 1 strongly disagree). Mean values for each four point forced choice question for this measure were: Percent patients whom CR has received referral who enroll in CR (3.00); Plan to complete course of CR (3.62); Assess and reassess outcomes (3.85); Program effectiveness and quality improvement strategies (3.77). N for total responders was 13 (86.7% response rate).

Additional testing will be made available by the time the NQF Cardiovascular Steering Committee convenes in February 2011.

2d. Exclusions Justified

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

No exclusions

2d.2 Citations for Evidence:

N/A

2d.3 Data/sample (description of data/sample and size): N/A

2d.4 Analytic Method (type analysis & rationale):

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NA

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 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).

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.

<p>N/A</p> <p>2d.5 Testing Results (e.g., frequency, variability, sensitivity analyses): N/A</p>	
<p>2e. Risk Adjustment for Outcomes/ Resource Use Measures</p> <p>2e.1 Data/sample (description of data/sample and size): No need to risk adjust this measure.</p> <p>2e.2 Analytic Method (type of risk adjustment, analysis, & rationale): N/A</p> <p>2e.3 Testing Results (risk model performance metrics): N/A</p> <p>2e.4 If outcome or resource use measure is not risk adjusted, provide rationale: N/A</p>	<p>2e</p> <p>C <input type="checkbox"/></p> <p>P <input type="checkbox"/></p> <p>M <input type="checkbox"/></p> <p>N <input type="checkbox"/></p> <p>NA <input type="checkbox"/></p>
<p>2f. Identification of Meaningful Differences in Performance</p> <p>2f.1 Data/sample from Testing or Current Use (description of data/sample and size): Cardiac Certification application: http://www.aacvpr.org/Portals/0/CardioCert_ScreenShots.pdf and Cardiac Recertification application: http://www.aacvpr.org/Portals/0/CardioRecert_ScreenShots.pdf In the year 2007 247 cardiac rehabilitation programs applied for AACVPR certification or re-certification. In 2009 106 programs applied for certification. These 353 programs form the data set for the analysis.</p> <p>2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance (type of analysis & rationale): Please refer to section 2b for details about training and inter-rater reliability testing of AACVPR program certification reviewers. Elements of this performance measure are currently used as required standards for program certification. Reviewers determine compliance with this measure by evaluating materials submitted for the questions on pages 2,3,4,8, and 9 of the Certification application. Programs must submit evidence for compliance with all application questions in order to be recommended for certification or recertification. The final decision for certification, recertification or denial is made by the AACVPR Board of Directors and specific information about the reason for denial is provided to the Board by the review committee. The reasons for denial during 2007 and 2009 are included in 2f.3.</p> <p>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): In 2007, 62 programs cardiac rehabilitation programs applied for AACVPR certification and in 2009 168 applied. Of these, 163 were approved (97%) and 5 were denied (3%). Programs that apply for certification represent a skewed sample of all cardiac rehabilitation programs in the country as they clearly have determined, through rigorous self study based on application guidelines and instructions, that they meet the quality guidelines set forth by the AACVPR certification process and thus, most likely meet the guidelines for these performance measures. The high acceptance rate demonstrates this aspect of the data analysis.</p> <p>In 2009, the program that was denied certification in 2007 was accepted. This demonstrates that the self-study initiated by the certification review process can be successful in remediation of programs to follow the performance measures proposed.</p> <p>Additionally, in 2007, 185 programs applied for re-certification and 184 were approved (99.5%) thus demonstrating the consistency of the measures. Finally, the one program denied re-certification in 2007, was approved in 2009 after remediation.</p>	<p>2f</p> <p>C <input type="checkbox"/></p> <p>P <input type="checkbox"/></p> <p>M <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>
<p>2g. Comparability of Multiple Data Sources/Methods</p> <p>2g.1 Data/sample (description of data/sample and size): We are not currently aware of any other data sources beyond what has been specified for the proposed 4 measures and the referral measures that have already been endorsed by NQF (0642 and 0643). See section 3b1 for details.</p>	<p>2g</p> <p>C <input type="checkbox"/></p> <p>P <input type="checkbox"/></p> <p>M <input type="checkbox"/></p> <p>N <input type="checkbox"/></p> <p>NA <input type="checkbox"/></p>

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.
 OR
 rationale/data support no risk adjustment.

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.

2g.2 Analytic Method (type of analysis & rationale): N/A	
2g.3 Testing Results (e.g., correlation statistics, comparison of rankings): N/A	
2h. Disparities in Care	
2h.1 If measure is stratified, provide stratified results (scores by stratified categories/cohorts): Not stratified	
2h.2 If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans: There is no need to stratify this measure related to disparities. However, it is hoped that by using this measure to analyze CR program enrollment and completion, as well as improvement in modifiable cardiovascular risk factors, it will then be possible to design performance improvement projects that decrease disparities in care.	2h C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>
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? Rationale:	2 C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>
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	
3a.1 Current Use: In use	
3a.2 Use in a public reporting initiative (disclosure of performance results to the public at large) (If used in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). <u>If not publicly reported</u> , state the plans to achieve public reporting within 3 years): This measure is incorporated into the AACVPR Certification and Recertification program and certified CR programs are identified in the AACVPR Program Directory, which is publicly available on several websites, including those listed below: AACVPR Certified Program Directory - Searchable Program Directory for patients and healthcare practitioners http://www.aacvpr.org/Resources/SearchableCertifiedProgramDirectory/tabid/113/Default.aspx AHA cardiac rehabilitation education web site: http://www.heart.org/HEARTORG/Conditions/More/CardiacRehab/What-is-Cardiac-Rehabilitation_UCM_307049_Article.jsp Society for Cardiovascular Angiography and Interventions (SCAI) Seconds- Count cardiac rehabilitation education webpage: http://www.scai.org/SecondsCount/Treatment/cardiarehab.aspx	
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). <u>If not used for QI</u> , state the plans to achieve use for QI within 3 years): Although this measure is not currently publicly reported, its components are included in the AACVPR Certification and Recertification application. Currently, there are a total of 1,147 AACVPR certified cardiac rehabilitation/secondary prevention programs in the United States, which is approximately less than 40% of eligible programs. A link to AACVPR Certified programs is found at http://www.aacvpr.org/Resources/SearchableCertifiedProgramDirectory/tabid/113/Default.aspx This measure is used for quality improvement initiatives within individual CR programs and among large	3a C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>

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.

groups of CR programs. For example, the Montana Outcomes project has used information from CR reporting of modifiable risk factors such as functional capacity, dietary fat consumption, and BP pressure measurement to develop three multi-state outcomes projects. Data reported from CR programs showed variation in functional capacity outcomes. Research into why some programs were under-performers revealed conservative exercise prescription and failure to encourage exercise on days that patients were not attending CR sessions. After intervention, which consisted of a webinar about appropriate exercise prescription and home walking programs, aggregate data revealed an increase in functional capacity from 28% improvement after CR to 39% improvement, compared to baseline. The Montana Outcomes project also helped underperforming CR programs improve outcomes related to dietary fat intake. The intervention program consisted of a webinar by a registered dietitian to CR staff, including access to patient education slides and handouts. After intervention, aggregate outcomes data related to reported dietary fat intake improved from 24% improvement in fat intake prior to intervention to 29% improvement. Finally, this registry was used to identify disparities related to blood pressure measurement in CR and to correct these disparities. Interventions included institution of JNC guidelines, patient education related to sodium, weight loss, medication compliance, physician communication, and encouraging exercise. Prior to the intervention (April to June, 2009), 81% met goal criteria for blood pressure control. Post intervention (July to September, 2009), 97% met goal criteria for BP control.

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*): No additional specific testing of interpretability is needed, as collection and analysis of outcomes data is already included in the AACVPR Program Certification/Recertification process. Collection of clinical, behavioral, health and service outcomes data by CR programs seeking certification or recertification has been in place for many years and CR professionals recognize that this is an expected component of CR programs. Description of program quality improvement projects based on analysis of outcomes data was recently added to the certification application. Basic principles of analysis of outcomes data and continuous quality improvement is understood by most health care professionals, as it has been a part of health care policy and regulation for many years.

This is apparent from a recent AACVPR survey of CR Program Directors (n=173). Although only 48.2% are currently documenting the percentage of patients for whom the program has received a formal referral who actually enroll in CR, 87.1% are documenting whether or not the patient completes the prescribed course of CR. A larger number (97.6%) reported documenting at least one outcome measure for each patient during CR and 81.8% reported assessing program effectiveness in achieving desired patient outcomes and initiating quality improvement strategies.

In addition, the value of AACVPR certification, which includes compliance with this measure, is understood by other health care professionals and the public, as reflected by inclusion of the AACVPR Certified Program Directory in both of the American Heart Association and Society for Cardiovascular Angiography and Interventions Cardiac Rehabilitation websites.

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

http://www.surveymonkey.com/sr.aspx?sm=S51wfjUseS_2f8aUeiTSmypJGplpYqAKypO9ARlij_2bWXQ_3d
http://www.heart.org/HEARTORG/Conditions/More/CardiacRehab/What-is-Cardiac-Rehabilitation_UCM_307049_Article.jsp
<http://www.scai.org/SecondsCount/Treatment/cardiarehab.aspx>

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

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

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

0113: Participation in a systematic database for cardiac surgery 0492: Participation in a Practice-based or individual Quality Database Registry with a standard measure set 0642: Cardiac Rehabilitation Referral from inpatient setting 0643: Cardiac Rehabilitation Referral from outpatient setting

(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):

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

<p>3b.2 Are the measure specifications harmonized? If not, why? Yes, fully harmonized. This measure is harmonized with the recently NQF endorsed referral to cardiac rehabilitation/secondary prevention programs from inpatient and outpatient setting measures.</p>	M <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>
<p>3c. Distinctive or Additive Value 3c.1 Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures: This measure encourages cardiac rehabilitation/secondary prevention programs to collect and respond to outcomes data that improve enrollment in and completion of CR. It also stimulates performance improvement strategies by CR professionals.</p> <p>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:</p> <p>TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for <i>Usability</i>?</p>	3c C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>
<p>Steering Committee: Overall, to what extent was the criterion, <i>Usability</i>, met? Rationale:</p>	3 C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>
4. FEASIBILITY	
<p>Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)</p>	Eval Rating
<p>4a. Data Generated as a Byproduct of Care Processes 4a.1-2 How are the data elements that are needed to compute measure scores generated? Data generated as byproduct of care processes during care delivery (Data are generated and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition), Other Inclusive Data Collection Tracking Sheets</p>	4a C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>
<p>4b. Electronic Sources 4b.1 Are all the data elements available electronically? (<i>elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims</i>) Yes</p> <p>4b.2 If not, specify the near-term path to achieve electronic capture by most providers.</p>	4b C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>
<p>4c. Exclusions 4c.1 Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?</p> <p>4c.2 If yes, provide justification.</p>	4c C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/> NA <input type="checkbox"/>
<p>4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences 4d.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results. A patient's failure to complete the program impacts the program's ability to capture individual outcomes and accurately reflect program effectiveness. Attrition is a challenge in a cardiac rehabilitation program where self motivation is a significant factor in patient and program success.</p>	4d C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/>
<p>4e. Data Collection Strategy/Implementation</p>	4e

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).

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.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:

C
 P
 M
 N

Closely monitoring each patient for barriers to completion is important. A system in place to collect the exit data in a timely manner (i.e., not waiting until the very last opportunity) would help prevent loss of data. In the future, site visits can be used to confirm compliance with policy, integrated into performance improvement for the AACVPR Certification/Recertification process. The AACVPR Program Certification process has been in place since 1999, and there are currently 1,147 certified cardiac rehabilitation programs in the United States. The certification process is evolving from a paper based system with subjective review by peers, including a level of state affiliate review, to an electronic based system with separate volunteer review, process/oversight, and contents groups. Over the past several years, process improvements have included using state volunteer groups as mentors to assure that data and elements are not missing, returning submitted material that does not meet HIPAA criteria, standardized reviewer tools, and training for volunteer reviewers. Observed variances in examiner scoring of similar content applicant responses have lead to changes in the scoring process to improve inter-rater reliability.

Over the last 5 years the Montana Outcomes Project has refined the indicators tracked and developed supplemental materials to assist CR programs in their day to day activities related to patient care and outcomes. In 2008, due to growth of the project, an Outcomes Workgroup was formed that included representatives from all the major regions represented (Pacific Northwest, Montana & Wyoming, North/South Dakota & Minnesota, Arizona, and Michigan). The Workgroup was formed to continually evaluate and improve the Montana Outcomes Project. The first area the Workgroup identified as a need was screening for depression. Based on an increasing number of studies highlighting the high depression rate among post cardiac event patients the Workgroup recommended adding the PHQ-9 depression screening tool to the list of indicators being tracked. Next the Workgroup developed the Thresholds document. The Thresholds document served as a guide to assist programs with interpreting the multiple surveys/screening tools the Outcomes Project utilizes. The Thresholds document gives recommendations based on how a patient scores on a particular survey/screening tool. Example: if a patient initially scores below 4 METs on the Duke Activity Status Index (DASI) it is recommended the patient re-take the (DASI) within 30 days. If no improvement is achieved the patient should be referred back to their physician for evaluation. Threshold recommendations were developed for the SF-36, Dartmouth COOP, DASI, PHQ-9 and the Block Dietary Fat Screener. Refinements were also made in the definition of program completion and reasons for not completing cardiac rehab were added and are now being tracked.

The Wisconsin Cardiac Rehabilitation Outcomes Registry (WiCORE) has demonstrated that programs can successfully enter and track selected outcomes data over time and use this data for monitoring program performance and quality improvement. Participating programs have demonstrated sufficient ability to capture both entry and discharge parameters with minimal time requirements and with minimal resources. Using preformatted, real-time "performance reports", programs are able to document their program's performance in many secondary prevention areas and to compare their performance against benchmarks. The Wisconsin Society for Cardiovascular and Pulmonary Health & Rehabilitation (WISCPHR) has used data from its outcomes projects to initiate quality improvement projects in lipid monitoring and follow-up of patients after graduation from outpatient cardiac rehabilitation.

A National Outcomes Data Registry is currently being planned by AACVPR, built on lessons learned from these projects. The AACVPR Registry Task Force includes leaders with experience from these outcomes projects and will incorporate the CR performance measures from this paired set. It is being designed to measure, collect and report data that includes, but may not be limited to, program demographics, program performance measures and individual, group and aggregate outcomes. The registry will be a web-based relational database that meets all regulatory requirements, including HIPAA. The registry will be linked to the AACVPR Program Certification/Recertification process to facilitate data submission and analysis. Lessons learned over the past ten years from the AACVPR Program Certification/Recertification process are described in other performance measures submitted in this measure application.

4e.2 Costs to implement the measure (costs of data collection, fees associated with proprietary measures):

<p>The cost of Certification in 2010 was \$600 and Recertification was \$500. The price will be raised to \$650 and \$550 respectively.</p> <p>4e.3 Evidence for costs: AACVPR is a not-for-profit organization and the cost of certification and recertification is used to support the electronic submission process, staff time, and volunteer travel expenses needed to support the Certification/Recertification program.</p> <p>4e.4 Business case documentation: See above for details. This is a relatively low-cost process, linked to a large body of evidence that both performance improvement and CR can significantly improve patient outcomes.</p>	
<p>TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for <i>Feasibility</i>?</p>	<p>4</p>
<p>Steering Committee: Overall, to what extent was the criterion, <i>Feasibility</i>, met? Rationale:</p>	<p>4 C <input type="checkbox"/> P <input type="checkbox"/> M <input type="checkbox"/> N <input type="checkbox"/></p>
<p>RECOMMENDATION</p>	
<p>(for NQF staff use) Check if measure is untested and only eligible for time-limited endorsement.</p>	<p>Time-limited <input type="checkbox"/></p>
<p>Steering Committee: Do you recommend for endorsement? Comments:</p>	<p>Y <input type="checkbox"/> N <input type="checkbox"/> A <input type="checkbox"/></p>
<p>CONTACT INFORMATION</p>	
<p>Co.1 Measure Steward (Intellectual Property Owner) Co.1 Organization American Association of Cardiovascular and Pulmonary Rehabilitation/American College of Cardiology Foundation/American Heart Association, 2400 N. Street NW., Washington DC, District Of Columbia, 20037</p> <p>Co.2 Point of Contact Jensen, Chiu, MHA, Jensen.Chiu@acc.org, 202-375-6285-</p>	
<p>Measure Developer If different from Measure Steward Co.3 Organization American Association of Cardiovascular and Pulmonary Rehabilitation/American College of Cardiology Foundation/American Heart Association, 2400 N. Street NW., Washington DC, District Of Columbia, 20037</p> <p>Co.4 Point of Contact Jensen, Chiu, MHA, Jensen.Chiu@acc.org, 202-375-6285-</p>	
<p>Co.5 Submitter If different from Measure Steward POC Jensen, Chiu, MHA, Jensen.Chiu@acc.org, 202-375-6285-, American Association of Cardiovascular and Pulmonary Rehabilitation/American College of Cardiology Foundation/American Heart Association</p>	
<p>Co.6 Additional organizations that sponsored/participated in measure development</p>	
<p>ADDITIONAL INFORMATION</p>	
<p>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. Provide a list of workgroup or panel member names and organizations. Describe the group's role in measure development. The workgroup selected all measures, developed the measure specifications and the text in the accompanying</p>	

<p>article. Randal J. Thomas, MD, MS, FAHA, FACP, Chair (AACVPR), Marjorie King, MD, FACC, MAACVPR(AACVPR), Karen Lui, RN, MS, MAACVPR (AACVPR), Neil Oldridge, PhD, FAACVPR (AACVPR), Ileana L. Piña, MD, FACC (ACCF/AHA Task Force on Performance Measures), John Spertus, MD, MPH, FACC (ACCF/AHA Task Force on Performance Measures)</p>
<p>Ad.2 If adapted, provide name of original measure: Cardiac Rehabilitation/Secondary Prevention (CR) Program Measurement Set Related to Monitoring Response to Therapy and Documenting Program Effectiveness Ad.3-5 If adapted, provide original specifications URL or attachment URL http://content.onlinejacc.org/cgi/reprint/j.jacc.2007.04.033v1.pdf</p>
<p>Measure Developer/Steward Updates and Ongoing Maintenance Ad.6 Year the measure was first released: 2007 Ad.7 Month and Year of most recent revision: 07, 2007 Ad.8 What is your frequency for review/update of this measure? Annual Review for relevance and update as needed based on new evidence/feedback from implementation Ad.9 When is the next scheduled review/update for this measure? 09, 2011</p>
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AACVPR/ACC/AHA PERFORMANCE MEASURES

AACVPR/ACC/AHA 2007 Performance Measures on Cardiac Rehabilitation for Referral to and Delivery of Cardiac Rehabilitation/Secondary Prevention Services

Endorsed by the American College of Chest Physicians, American College of Sports Medicine, American Physical Therapy Association, Canadian Association of Cardiac Rehabilitation, European Association for Cardiovascular Prevention and Rehabilitation, Inter-American Heart Foundation, National Association of Clinical Nurse Specialists, Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons

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Preamble

Medicine is experiencing an unprecedented focus on quantifying and improving health care quality. The American College of Cardiology (ACC) and the American Heart Association (AHA) have developed a multi-faceted strategy to facilitate the process of improving clinical care. The initial phase of this effort was to create clinical practice guidelines that carefully review and synthesize available evidence to better guide patient care. Such guidelines are written in a spirit of suggesting diagnostic or therapeutic interventions for patients in most circumstances. Accordingly, significant judgment by clinicians is required to adapt these guidelines to the care of individual patients, and these guidelines can be generated with varying degrees of confidence based upon available evidence.

Occasionally, the evidence supporting a particular structural aspect or process of care is so strong that failure to perform such actions reduces the likelihood that optimal patient outcomes will occur. Creating a mechanism for quantifying these opportunities to improve the outcomes of care is an important and pressing challenge. In the next phase of its quality improvement efforts, the ACC and the AHA created the ACC/AHA Task Force on Performance Measures in February 2000 to spearhead the development of performance measures that allow the quality of cardiovascular care to be assessed and improved. Three nominees from each organization were charged with the task of assembling teams of clinical and methodological experts, both from within the sponsoring organizations and from other organizations dedicated to the care of patients covered by the performance measurement set. These writing committees were given careful guidance with respect to the necessary attributes of good performance measures and the process of identifying, constructing, and refining these measures so that they can accurately achieve their desired goals (1).

The role of performance measurement writing committees is not to perform a primary evaluation of the medical

literature; this is undertaken by ACC/AHA guidelines committees. However, performance measurement writing committees work collaboratively with guidelines committees so that the guideline recommendations are written with a degree of specificity that supports performance measurement and so that new knowledge can be rapidly incorporated into performance measurement. Development of ACC/AHA guidelines includes a detailed review of and ranking of the evidence available for the diagnosis and treatment of specific disease areas. Published guideline recommendations employ the ACC/AHA classification system I, IIa, IIb, and III (Table 1).

So as not to duplicate performance measure development efforts, writing committees were also instructed to evaluate existing nationally recognized performance measures using the ACC/AHA “attributes of good performance measures.” The measure specifications were adopted for those performance measures that meet these criteria. Such measures have established validity, reliability, and feasibility and will form the foundation of the ACC/AHA measurement sets. Furthermore, writing committees are encouraged to identify additional performance measures that correspond to those key areas of quality proven to improve patient outcomes.

The ACC/AHA Performance Measurement Sets are to be applied in the inpatient and/or outpatient setting depending upon the topic. Although inpatient measures have traditionally been captured by retrospective data collection, the increased use of electronic medical records allows for prospective collection in the inpatient and outpatient settings. Prospective data collection is itself a continuous quality improvement process. The performance measures quantify explicit actions performed in carefully specified patients for whom adherence should be advocated in all but the most unusual circumstances. In addition, the measures are constructed with the intent to facilitate both retrospective and prospective data collection using explicit administrative and/or easily documented clinical criteria. Furthermore, the data elements

Table 1. Applying Classification of Recommendations and Level of Evidence†

		“SIZE of TREATMENT EFFECT”			
		Class I <i>Benefit >>> Risk</i>	Class IIa <i>Benefit >> Risk</i> Additional studies with focused objectives needed	Class IIb <i>Benefit ≥ Risk</i> Additional studies with broad objectives needed; Additional registry data would be helpful	Class III <i>Risk ≥ Benefit</i> No additional studies needed
“Estimate of Certainty (Precision) of Treatment Effect”	Level A <i>Multiple (3-5) population risk strata evaluated*</i> <i>General consistency of direction and magnitude of effect</i>	Procedure/Treatment SHOULD be performed/administered • Recommendation that procedure or treatment is useful/effective • Sufficient evidence from multiple randomized trials or meta-analyses	IT IS REASONABLE to perform procedure/administer treatment • Recommendation in favor of treatment or procedure being useful/effective • Some conflicting evidence from multiple randomized trials or meta-analyses	Procedure/Treatment MAY BE CONSIDERED • Recommendation’s usefulness/efficacy less well established • Greater conflicting evidence from multiple randomized trials or meta-analyses	Procedure/Treatment should NOT be performed/administered SINCE IT IS NOT HELPFUL AND MAY BE HARMFUL • Recommendation that procedure or treatment not useful/effective and may be harmful • Sufficient evidence from multiple randomized trials or meta-analyses
	Level B <i>Limited (2-3) population risk strata evaluated*</i>	• Recommendation that procedure or treatment is useful/effective • Limited evidence from single randomized trial or non-randomized studies	• Recommendation in favor of treatment or procedure being useful/effective • Some conflicting evidence from single randomized trial or non-randomized studies	• Recommendation’s usefulness/efficacy less well established • Greater conflicting evidence from single randomized trial or non-randomized studies	• Recommendation that procedure or treatment not useful/effective and may be harmful • Limited evidence from single randomized trial or non-randomized studies
	Level C <i>Very limited (1-2) population risk strata evaluated*</i>	• Recommendation that procedure or treatment is useful/effective • Only expert opinion, case studies, or standard-of-care	• Recommendation in favor of treatment or procedure being useful/effective • Only diverging expert opinion, case studies, or standard-of-care	• Recommendation’s usefulness/efficacy less well established • Only diverging expert opinion, case studies, or standard-of-care	• Recommendation that procedure or treatment not useful/effective and may be harmful • Only expert opinion, case studies, or standard-of-care

*Data available from clinical trials or registries about the usefulness/efficacy in different subpopulations, such as gender, age, history of diabetes, history of prior myocardial infarction, history of heart failure, and prior aspirin use. A recommendation with Level of Evidence B or C does not imply that the recommendation is weak. Many important clinical questions addressed in the guidelines do not lend themselves to clinical trials. Even though randomized trials are not available, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

†In 2003, the ACC/AHA Task Force on Practice Guidelines developed a list of suggested phrases to use when writing recommendations. All guideline recommendations have been written in full sentences that express a complete thought, such that a recommendation, even if separated and presented apart from the rest of the document (including headings above sets of recommendations), would still convey the full intent of the recommendation. It is hoped that this will increase readers’ comprehension of the guidelines and will allow queries at the individual recommendation level.

required to construct the performance measures are identified and linked to existing ACC/AHA Clinical Data Standards to encourage the standardization of cardiovascular measurement.

While the focus of the performance measures writing committees is to develop measures for internal quality improvement, it is appreciated that other organizations may use these measures for external reporting of provider performance. Therefore, it is within the scope of the writing committee’s task to comment on the strengths and limitations of externally reporting potential performance measures. Specifically, this was done in the “Challenges to Implementation” sections in each of the performance measures when appropriate (see Appendixes A and B).

All the measures contained in this set have limitations and challenges to implementation that could result in unintended consequences when used for accountability purposes. The implementation of these measures for purposes other than quality improvement (QI) require field testing to address issues related to, but not limited to, sample size, reasonable frequency of use for an intervention, comparability, and audit requirements. The way in which these issues are addressed will be highly dependent on the type of accountability system developed, including data collection

method, assignment of patients to physicians for measurement purposes, baseline measure setting, incentive system, and public reporting method among others. The ACC/AHA encourages those interested in working on implementation of these measures for purposes beyond QI to work with the ACC/AHA to understand these complex issues in pilot testing projects that can measure the impact of any limitations and provide guidance on possible refinements of the measures that would make them more suitable for additional purposes.

In the process of facilitating the measurement of cardiovascular health care quality, the ACC/AHA Performance Measurement Sets can serve as a vehicle for more rapidly translating the strongest clinical evidence into practice. These documents are intended to provide practitioners with “tools” for measuring the quality of care and for identifying opportunities to improve. Because the target audience and unit of analysis for these measures is the practitioner, they were constructed from the provider’s perspective and were not intended to characterize “good” or “bad” practice but to be part of a system with which to assess and improve health care quality. It is our hope that an application of these performance measures within a system of QI will provide

a mechanism through which the quality of medical care can be measured and improved.

*Robert O. Bonow, MD, FACC, FAHA
Chair, ACC/AHA Task Force on Performance Measures*

I. Introduction

Over the past 4 decades, cardiac rehabilitation/secondary prevention (CR) services have become recognized as a significant component in the continuum of care for persons with cardiovascular disease (CVD). The role of CR services in the comprehensive secondary prevention of CVD events is well documented (2–12) and has been promoted by various health care organizations and position statements (4,12–18). However, performance measures for CR services have not been published to date.

To formalize performance measures for CR services, the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR)/American College of Cardiology (ACC)/American Heart Association (AHA) Cardiac Rehabilitation/Secondary Prevention Performance Measures Writing Committee was convened in November 2005. The Writing Committee was given the charge of developing performance measures that cover 2 specific aspects of CR services: 1) referral of eligible patients to a CR program and 2) delivery of CR services through multidisciplinary CR programs.

The ultimate purpose of these performance measure sets is to help improve the delivery of CR in order to reduce cardiovascular mortality and morbidity and optimize health in persons with CVD, including acute myocardial infarction (MI) or status-post coronary artery bypass graft (CABG) surgery, percutaneous coronary intervention (PCI), and heart transplant or heart valve surgery. Using the previously published methodology of the ACC and the AHA (1,19), performance measures for the referral of eligible patients to a CR program, and the delivery of CR services through multidisciplinary CR programs were developed, focusing on processes of care that have been documented to help improve patient outcomes (using the ACC/AHA system for classification of recommendations and level of evidence for guidelines and clinical recommendations shown in Table 1). Both inpatient and outpatient settings of cardiovascular care were considered, resulting in performance measures being created for 3 specific settings: 1) hospitals, 2) office practices, and 3) CR programs.

A. Rationale for Cardiac Rehabilitation/Secondary Prevention Performance Measures

The rationale for developing and implementing performance measure sets for referral to and delivery of CR services is based on several key factors:

- There has been growing scientific evidence over the past 3 decades of the benefits of CR services for persons with CVD (2,17,20). Evidence suggests that the benefits of

CR services are as significant in recent years as they were in the pre-thrombolytic era (9,21). Because of this mounting evidence, a number of health care organizations have endorsed the use of CR services in persons with CVD by including provisions for CR in their practice guidelines and practice management position papers (4,12,13,18,21,22,23).

- Despite the known benefits of CR and despite the widespread endorsement of its use, CR is vastly underutilized, with less than 30% of eligible patients participating in a CR program after a CVD event (24–26). Reasons for this gap in CR participation are numerous, but the most critical and potentially most correctable reasons revolve around obstacles in the initial referral of patients to CR programs. These obstacles can be reduced through the systematic adoption of standing orders and other similar tools for CR referral for appropriate hospitalized patients (27). Furthermore, physician accountability associated with the use of these performance measures may lead to new and novel approaches to improve referral rates and improve the outcome of patients with CVD.
- Standards for CR programs have been previously published (28), and systems for CR program certification exist, such as the certification process offered through the AACVPR for CR programs that meet their standards of practice. Unfortunately, since such certification is not required for CR program operation or for reimbursement purposes, CR program certification is obtained by a relatively small portion of CR programs in the United States. As of October 2006, only 973 (37%) out of an estimated 2,621 CR programs operating in the United States have AACVPR certification (29) (personal communication, A. Lynn, October 31, 2006).
- Recommendations for CR referral and participation are included in many practice guidelines and position papers regarding the care of persons with CVD, but to date, no groups have included referral to CR services in their CVD-related performance measure sets. Likewise, there are no currently available performance measure sets that include measures for the delivery of CR services by outpatient CR programs.

Clearly there is a need and also a prime opportunity to reduce the gap in delivery of CR services to persons with CVD. Such an improvement in CR delivery will require better approaches in the referral to, enrollment in, and completion of programs in CR. It is anticipated that the implementation of CR performance measure sets will stimulate changes in the clinical practice of preventive and rehabilitative care for persons with CVD.

B. Writing Committee Structure and Members

To formalize performance measures for CR services, the AACVPR/ACC/AHA Cardiac Rehabilitation/Secondary Prevention Performance Measures Writing Committee was

convened in November 2005. The Writing Committee was composed of nominated representatives from the AACVPR, the ACC, and the AHA, including past and current representatives of the ACC Task Force on Performance Measures, past and current presidents of AACVPR, and clinicians with expertise in general clinical cardiology, heart failure, CVD, and CR. An initial committee meeting was held in Kansas City, Missouri, on January 23 and 24, 2006. Committee meetings were otherwise held by teleconference, generally at weekly intervals.

C. Relationships With Industry

Committee members volunteered their time to participate in the Writing Committee and acknowledged any potential conflicts of interest (Appendix D). The cost of the initial committee meeting in January 2006 and the cost of conference calls were supported by the AACVPR, the ACC, and the AHA. No commercial support was provided for any aspect of the Committee's work.

D. Review and Endorsement

A public comment period was held for this document from December 11, 2006, until January 11, 2007. Reviewers were asked to provide comments on the document on the basis of the rating form and guide shown in Appendix C. Reviewer comments were considered and incorporated into a revised version of the document. Review and final approval of the final version of the paper was obtained through the governing bodies from the AACVPR, the ACC, and the AHA. Endorsement of the final paper was sought from key partnering organizations.

II. Methodology

A. Definition of Cardiac Rehabilitation/Secondary Prevention

Over the past decade, various CR program delivery paradigms have evolved from the traditional definition where programs operate within a CR center and patients attend sessions in person. Some examples of these programs include those programs that have staff members provide CR services to patients through novel methods such as those that are home-, telephone-, or Internet-based.

The definition for CR in general use today is based on a modification from the original World Health Organization 1964 definition of CR (30). This definition reinforced the observation that CR is an integral component in the overall management of patients with CVD, that the patient plays a significant role in the successful outcome of CR, and that CR is an important source of services aimed at the secondary prevention of CVD events (2,4,12).

Building on this original definition, a number of other complementary definitions of CR have been promulgated by various organizations including the U.S. Public Health Service, the AHA, the AACVPR, and the Canadian Association of Cardiac Rehabilitation (4,18). These up-

dated definitions emphasize the integral role of CR in the secondary prevention of CVD.

The definition used by the U.S. Public Health Service and by the Cardiac Rehabilitation/Secondary Prevention Performance Measures Writing Committee is as follows:

“Cardiac rehabilitation services are comprehensive, long-term programs involving medical evaluation, prescribed exercise, cardiac risk factor modification, education, and counselling. These programs are designed to limit the physiologic and psychological effects of cardiac illness, reduce the risk for sudden death or re-infarction, control cardiac symptoms, stabilize or reverse the atherosclerotic process, and enhance the psychosocial and vocational status of selected patients” (4).

Cardiac rehabilitation/secondary prevention programs are generally divided into 3 main phases:

1. Inpatient CR (also known as Phase 1 CR): a program that delivers preventive and rehabilitative services to hospitalized patients following an index CVD event, such as an MI/acute coronary syndrome;
2. Early outpatient CR (also known as Phase 2 CR): a program that delivers preventive and rehabilitative services to patients in the outpatient setting early after a CVD event, generally within the first 3 to 6 months after the event but continuing for as much as 1 year after the event;
3. Long-term outpatient CR (also known as Phase 3 or Phase 4 CR): a program that provides longer term delivery of preventive and rehabilitative services for patients in the outpatient setting.

The main focus of this position paper is on the referral to and delivery of early outpatient CR services principally because it is the component of CR that has been most widely documented to help reduce the risk of CVD mortality among its participants.

B. Definition of Appropriate Patients for Cardiac Rehabilitation/Secondary Prevention

Patients who are considered eligible for CR include those who have experienced 1 or more of the following conditions as a primary diagnosis sometime within the previous year:

- MI/acute coronary syndrome*
- CABG*
- PCI*
- Stable angina*
- Heart valve surgical repair or replacement
- Heart or heart/lung transplantation

The thrust of this document is focused on the management of persons with coronary artery disease-related conditions (noted in the list above with an *), but CR services are considered appropriate and beneficial for persons: 1) after heart valve surgical repair or replacement, and 2) after heart or heart/lung transplantation (as previously listed) (31-34). Furthermore, growing evidence from published studies supports a benefit of CR for persons with chronic heart failure or peripheral arterial disease (35,36). However,

formal recommendations by health care organizations to approve and/or cover CR services in these patient populations will depend upon policy decision-makers and, particularly in the case of chronic heart failure, the results of ongoing research studies.

Persons who are potentially eligible for CR may, in fact, have barriers that limit their participation in CR. Such barriers include those that are patient-oriented (e.g., patient refusal), others that are provider-oriented (e.g., provider deems the patient ineligible for CR due to a high-risk medical condition and/or an absolute contraindication to exercise), and still others that are related to the health care system and/or societal barriers (e.g., lack of a CR program, lack of insurance coverage, etc.) (17). Patients with such barriers may be excluded from the number of patients who are considered to be eligible for CR referral (Appendix A, under “Numerator” criteria for assessing the percentage of eligible patients who have been referred to a CR program). It should be noted, however, that even though some persons may have significant patient- or provider-oriented barriers to CR referral, nearly all patients with CVD can benefit from at least some components of a comprehensive, secondary prevention CR program.

C. Overview of Performance Measures Created

Both structure-based and process-based performance measures are included in the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets. While important and related, specific measures focused on clinical outcomes are not included. The performance measures that are included are designed to help health care groups identify potentially correctable and actionable “upstream” sources of suboptimal clinical care, such as structure- and process-based gaps in CR services. Details for the dimensions of care included in the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets are outlined as follows:

1. **Structure-based measures** quantify the infrastructure from which CR is provided and are based on the provision of appropriate personnel and equipment to satisfy high-quality standards of care for CR services. For example, a structure-based performance measure for a CR program is one that specifies that a CR program has appropriate personnel and equipment to provide rapid care in medical emergencies that may occur during CR program sessions.
2. **Process-based measures** quantify specific aspects of care and are designed to capture all relevant dimensions of CR care. For example, a process-based performance measure for a CR program is one that specifies that all patients in a CR program undergo comprehensive, standardized assessment of their cardiovascular risk factors upon entry to the CR program.

It should also be noted that the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets have been designed for 3 different geographical settings of care:

1) the hospital, 2) the physician office, and 3) the CR program settings. Staff members within each of these areas who help provide care to persons with CVD are held accountable for the various aspects of CR services (referral to, enrollment in, and delivery of CR services).

D. Literature Review and Evidence Base

There is substantial evidence to conclude that CR is reasonable and necessary following MI, CABG surgery, stable angina, heart valve repair or replacement, PCI, and heart or heart/lung transplant (12). Outpatient, medically supervised CR, as described by the U.S. Public Health Service, is a comprehensive, long-term intervention including medical evaluation, prescribed exercise, cardiac risk-factor modification, education, and counseling typically initiated 1 to 3 weeks after hospital discharge and typically including electrocardiographic monitoring of patients (see Section II.A.) (4).

Meta-analyses and systematic reviews (2,3,5–11) provide and summarize the extensive evidence that has been generated from published randomized clinical trials demonstrating that exercise-based CR services are beneficial for patients with established CVD. These benefits include improved processes of care and risk-factor profiles that are closely linked to subsequent mortality and morbidity. Pooled data from randomized clinical trials of CR demonstrate a mortality benefit of approximately 20% to 25% (2,3,5–11) and a trend towards reduction in nonfatal recurrent MI over a median follow-up of 12 months (10).

E. Definition and Selection of Measures

The Cardiac Rehabilitation/Secondary Prevention Performance Measure Writing Committee initially identified 39 factors from various practice guidelines and other reports that were considered potential performance measures for the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets (see Table 1 for standard guidelines that were used to rate the classification of recommendations and level of evidence for assessing these factors). The group evaluated these 39 factors according to guidelines established by the ACC/AHA Task Force on Performance Measures (1). Those measures that were deemed to be most evidence-based, interpretable, actionable, clinically meaningful, valid, reliable, and feasible were included in the final performance measurement sets. Once these measures were identified, the Writing Committee then discussed and refined, over a series of months, the definition, content, and other details of each of the selected measures.

While most performance measures are designed for a specific condition and phase of a particular disease, CR referral is applicable and appropriate for a number of different conditions and phases of CVD. Accordingly, the Writing Committee created 2 sets of performance measures, one related to the appropriate referral of patients to a CR program and another set related to optimal performance of a CR program itself. In creating the first set, the Writing Committee sought to create

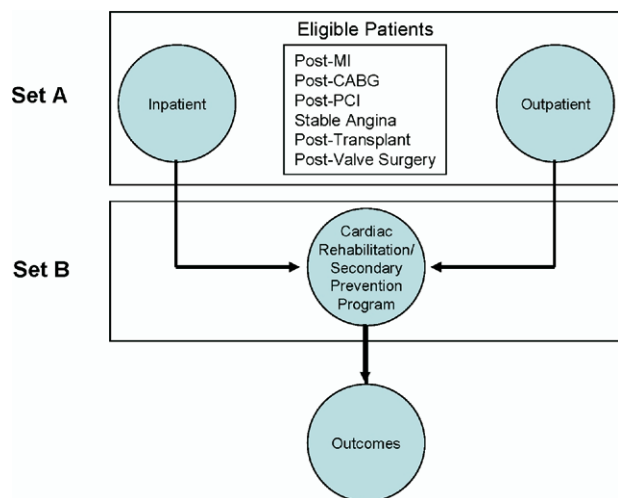


Figure 1. Intended Application of the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets A and B

Diagram shows the relationship between the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets A and B and the patient sub-groups for which the Performance Measurement Sets apply. CABG = coronary artery bypass grafting; MI = myocardial infarction; PCI = percutaneous coronary intervention.

a measure that would be appropriate for insertion into other performance measurement sets for which CR referral would be appropriate (e.g., performance measurement sets for care of patients following MI, PCI, or CABG). Figure 1 outlines the overall organization of these 2 types of measures and their intended applications.

III. Measures Related to Early Outpatient CR Referral

The performance measures that are related to the referral of appropriate patients to an early outpatient CR program are described in the next section.

A. Populations, Care Period, and Responsible Parties

Patients who are appropriate for referral to an early outpatient CR program include those patients who, in the previous 12 months, have had any of the diagnoses listed in Section II.B. The CR services are generally most beneficial when delivered soon after the index hospitalization. However, there are often clinical, social, and logistical reasons which delay enrollment in CR. For this reason, many third-party payers allow CR services to begin up to 6 to 12 months following a cardiac event. Because patients can be referred to CR at varying times following a CVD event, parties responsible for the referral of patients to CR include hospitals and health care systems as well as physician practices and other health care settings with primary responsibility for the care of patients after a CVD event.

B. Brief Summary of the Measures

The Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A (Appendix A) is based on 2 criteria for the appropriate referral of patients to an early outpatient CR program:

1. All hospitalized patients with a qualifying CVD event are referred to an early outpatient CR program prior to hospital discharge; and
2. All outpatients with a qualifying diagnosis within the past year who have not already participated in an early outpatient CR program are referred to an early outpatient CR program by their health care provider.

It should be noted that the health care system and its providers who care for patients during and/or after CVD events are accountable for these performance measures. Physicians or other health care providers who see patients with CVD but who do not have a primary role in managing their CVD are not accountable for meeting these criteria. For example, an ophthalmologist who is performing an annual retinal exam on a diabetic patient in the year after their MI would not be responsible for referring the patient to a CR program. Additional details regarding this performance measurement set are included in Appendix A.

C. Data Collection Instruments

Examples of tools that may be of help in applying the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A (Appendix A) into practice are included in Figures 2 and 3. In Figure 2, an example is shown of a standardized CR referral tool that health care systems could potentially use in the inpatient setting, whereas Figure 3 shows an example of a potential CR referral tool for outpatient practice settings. Figure 4 shows an example of a performance measure tracking tool that can be used by health care systems following an MI, with the performance measure of CR referral included in the performance measurement tool. These tools are given as examples and not as endorsed instruments. Health care systems and providers are encouraged to develop and implement systematic tools that are most appropriate and most effective for their particular setting and patient population groups.

D. Inclusion in Other Performance Measurement Sets

The Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A (Appendix A) is designed to be included in (i.e., “plugged into”) other related performance measurement sets for which referral to a CR program would be considered an appropriate component of high-quality care (e.g., can be “plugged into” the performance measurement set for management of patients with myocardial infarction).

**Referral Order to an Early Outpatient Cardiac Rehabilitation/Secondary Prevention Program:
From an Inpatient Setting**

(Order applies to patients [18 years of age and older] with cardiovascular disease)

ALERT: This order set does not apply to patients who are deemed ineligible for cardiac rehabilitation/secondary prevention programs, including those in long-term nursing home placement for more than 60 days, homebound patients, or patients with severe dementia.**Intervention requested:** Order early outpatient cardiac rehabilitation referral (Phase II).**Primary Diagnosis During this Hospitalization: (Select All That Apply)**

- | | |
|--|--|
| <input type="checkbox"/> Angina | <input type="checkbox"/> Coronary Artery Disease (CAD) |
| <input type="checkbox"/> Percutaneous Coronary Intervention (PCI) | <input type="checkbox"/> Heart Transplant |
| <input type="checkbox"/> Myocardial Infarction (MI) | <input type="checkbox"/> Valve Surgery |
| <input type="checkbox"/> Coronary Artery Bypass Graft (CABG) Surgery | <input type="checkbox"/> Other: _____ |

Prescriber's Signature: _____

Prescriber's Pager#: _____

Prescriber's Printed Name: _____

Date: _____ Time: _____

Referral Process:

1. Patient's primary cardiovascular provider, or designate, to carry out.
2. Impress upon the patient the importance of early outpatient cardiac rehabilitation (see script).
3. Arrange for inpatient cardiac rehabilitation contact prior to dismissal.
4. CR contact to:
 - a. Discuss with patient the choices of cardiac rehabilitation programs in his/her home area and have patient select a program.
 - b. Provide patient with information about the selected cardiac rehabilitation program
 - c. With patient consent, call the receiving cardiac rehabilitation program, chosen by patient, requesting that the program contact the patient at home to arrange the first appointment.
 - d. Document the name of the cardiac rehabilitation program in the hospital discharge summary with copies of the appropriate enclosures.
 - e. With patient consent, send hospital discharge summary and other appropriate information to the CR program (could include surgical report, angiogram report, electrocardiogram, inpatient CR evaluation, etc.).

Suggested Script for Description of Cardiac Rehabilitation Program:

Cardiac rehabilitation is important for patients like you who are recovering from a heart problem. Health care professionals work in cardiac rehabilitation programs and assist you with getting the treatments you need to get stronger and healthier, like exercise, healthy eating habits, and medications. Cardiac rehabilitation has been shown to help people with heart problems live longer and have better life enjoyment than people who do not go to cardiac rehabilitation. Insurance companies generally cover cardiac rehabilitation, but if you are not sure about your insurance coverage, you should talk with your insurance company or with the cardiac rehabilitation program staff.

Figure 2. Example of a Referral Tool for an Inpatient to an Outpatient CR Program

Tool to be considered for use with the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A. Adapted with permission from Zarling KK, Schad SP, Salz KA, et al. Mayo Clinic's Order Set for Provider Referral to Outpatient Cardiac Rehabilitation (Phase II). Mayo Foundation for Medical Education and Research, 2005. Rochester, MN (37). CR = cardiac rehabilitation/secondary prevention program.

**IV. Measures to Define Quality
Early Outpatient CR Programs**

The second set of performance measures included in the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets—Performance Measurement Set B (Appendix B)—relates to the optimal structure and processes of

care for CR programs themselves and is described in the next section.

**A. Populations, Care Period, and
Responsible Parties**

Patients who are appropriate for entry into a CR program include persons 18 years of age or older who, during the

**Referral Order to an Early Outpatient Cardiac Rehabilitation/Secondary Prevention Program:
From an Outpatient Setting**

(Order applies to patients [18 years of age and older] with cardiovascular disease)

ALERT: This order set does not apply to patients who are deemed ineligible for cardiac rehabilitation/secondary prevention programs, including those in long-term nursing home placement for more than 60 days, homebound patients, or patients with severe dementia.**Intervention requested:** Order early outpatient cardiac rehabilitation referral (Phase II).**Primary Diagnosis During this Hospitalization: (Select All That Apply)**

- | | |
|--|--|
| <input type="checkbox"/> Angina | <input type="checkbox"/> Coronary Artery Disease (CAD) |
| <input type="checkbox"/> Percutaneous Coronary Intervention (PCI) | <input type="checkbox"/> Heart Transplant |
| <input type="checkbox"/> Myocardial Infarction (MI) | <input type="checkbox"/> Valve Surgery |
| <input type="checkbox"/> Coronary Artery Bypass Graft (CABG) Surgery | <input type="checkbox"/> Other: _____ |

Prescriber's Signature: _____

Prescriber's Pager#: _____

Prescriber's Printed Name: _____

Date: _____ Time: _____

Referral Process:

1. Patient's primary cardiovascular provider, or designate, to carry out.
2. Impress upon the patient the importance of early outpatient cardiac rehabilitation (see script).
3. Arrange for inpatient cardiac rehabilitation contact prior to dismissal.
4. CR contact to:
 - a. Discuss with patient the choices of cardiac rehabilitation programs in his/her home area and have patient select a program.
 - b. Provide patient with information about the selected cardiac rehabilitation program.
 - c. With patient consent, call the receiving cardiac rehabilitation program, chosen by patient, requesting that the program contact the patient at home to arrange the first appointment.
 - d. Document the name of the cardiac rehabilitation program in the hospital discharge summary with copies of the appropriate enclosures.
 - e. With patient consent, send hospital discharge summary and other appropriate information to the CR program (could include surgical report, angiogram report, electrocardiogram, inpatient CR evaluation, etc.).

Suggested Script for Description of Cardiac Rehabilitation Program:

Cardiac rehabilitation is important for patients like you who are recovering from a heart problem. Health care professionals work in cardiac rehabilitation programs and assist you with getting the treatments you need to get stronger and healthier, like exercise, healthy eating habits, and medications. Cardiac rehabilitation has been shown to help people with heart problems live longer and have better life enjoyment than people who do not go to cardiac rehabilitation. Insurance companies generally cover cardiac rehabilitation, but if you are not sure about your insurance coverage, you should talk with your insurance company or with the cardiac rehabilitation program staff.

Figure 3. Example of Referral Tool for an Outpatient to an Outpatient CR Program

Sample tool for referring outpatients to an early outpatient/secondary prevention program, to be considered for use with the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A. Adapted with permission from Zarling KK, Schad SP, Salz KA, et al. Mayo Clinic's Order Set for Provider Referral to Outpatient Cardiac Rehabilitation (Phase II). Mayo Foundation for Medical Education and Research, 2005. Rochester, MN (37). CR = cardiac rehabilitation/secondary prevention.

previous year, have had 1 or more of the qualifying diagnoses listed in Section II.B. Patients who are considered ineligible for CR services, by patient-oriented or provider-oriented criteria (see Section II.B.), may still be appropriate candidates for enrollment in modified CR programs that adapt their services to a given patient's limitations, geographic or otherwise. The period of care for early outpatient

CR typically begins 1 to 3 weeks after the index CVD event and lasts up to 3 to 6 months.

The unit of analysis for the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set B is the health care system's CR program(s). Therefore, the responsible parties for the performance of early outpatient CR services include members of the CR program staff—the

Insert Patient Information here

Insert hospital Identification/logo here

Multidisciplinary Cardiac Discharge Checklist/Instructions

To be completed by physician, nurse, or other care provider at patient's discharge

Admission Date: _____ Discharge Date: _____

Diagnosis: _____

Check each therapy prescribed or check contraindication reason.

- Aspirin: next dose due (date/time) _____ / _____
- No aspirin, reason documented in discharge summary.
- Clopidogrel: next dose due (date/time) _____ / _____
- No clopidogrel, reason documented in discharge summary.
- Beta blocker: next dose due (date/time) _____ / _____
- No beta blocker, reason in discharge summary.
- ACE inhibitor: next dose due (date/time) _____ / _____
- No ACE inhibitor, reason documented in discharge summary.
- Statin or other lipid-lowering agent (LLA): next dose due (date/time) _____ / _____
- No statin or other LLA, reason documented in discharge summary.
- Cardiac rehabilitation referral made, patient information communicated to program, and program information/appointment communicated to patient**
- No exercise prescription and/or cardiac rehabilitation referral with reason in discharge summary.
- Smoking cessation teaching and pharmacological therapy given (patient is a current smoker or former smoker of less than 1 year) or
- Smoking cessation teaching and pharmacological therapy not required (patient is nonsmoker or former smoker of greater than 1 year).
- Education on warning signs of MI and what to do if symptoms given.
- Education not given, reason documented in discharge summary.
- Diet: low-fat, low-cholesterol, no added salt _____
- Follow-up appointment documented in medical record.

Follow-up appointment made? Date: _____ Time: _____ OR

Call Dr. _____ for an appointment in _____ days. Phone # _____

Call Dr. _____ for an appointment in _____ days. Phone # _____

Call _____ Cardiac Rehabilitation Program within _____ days. Phone # _____

If condition worsens, new symptoms develop, or questions arise, call your physician.

I hereby acknowledge receiving the explanation of the above instructions:

Patient's signature: _____ Date: _____

___ Patient left w/o signing

It is recommended that a copy of this go to medical records, to the patient, and to the physician. You may want to consider triplicate carbonless copy forms.

Figure 4. Example of a Tracking Tool for Assessing the Provision of Appropriate Prevention Therapies, Including Referral to a CR Program, for Patients Hospitalized With a CAD Event

Data collection tool to be considered for use with the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A (adapted from American Heart Association's Get With The Guidelines) (38). ACE = angiotensin-converting enzyme; CAD = coronary artery disease; CR = cardiac rehabilitation/secondary prevention; MI = myocardial infarction; w/o = without.

medical director, nurses, exercise specialists, cardiovascular administrators, and other members of the CR team.

B. Brief Summary of the Outpatient CR Program Measurement Set

The Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set B for the delivery of CR services includes those measures that were considered by the Writing Committee to have the highest level of evidence and consensus support among the Committee members.

The measures selected include both structure- and process-based measures that assess for the use of the following policies and procedures by CR programs:

Structural measures (*Appendix B: Performance Measure B-1*)

- A physician medical director is responsible for the program
- An emergency response team with appropriate emergency equipment and trained staff is available during patient care hours

Process measures (*Appendix B: Performance Measures B-2, B-3, and B-4*)

- Assessment and documentation of each patient's risk for adverse events during exercise
- A process to assess patients for intercurrent changes in symptoms
- Individualized assessment and evaluation of modifiable CVD risk factors
- Development of individualized risk reduction interventions for identified conditions and coordination of care with other health care providers
- Evidence of a plan to monitor response and document program effectiveness through ongoing analysis of aggregate data. This includes:
 - A plan to assess completion of the prescribed course of CR
 - A standardized plan to reassess patient outcomes at the completion of CR
- Methodology to document program effectiveness and initiate quality improvement strategies

Appendix B provides the detailed specifications for each outpatient performance measure.

C. Data Collection Instruments

The Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set B is intended to be used prospectively to review a program's internal procedures with the ultimate goal of enhancing the quality improvement process. To aid in data compilation, ideally collected prospectively, a data collection tool or flow sheet is recommended. An example of such a collection tool is shown in Table 2.

Health care systems and practices are encouraged to develop and/or use a tool that conforms to local practice patterns and standards.

V. Discussion

The aim of the Cardiac Rehabilitation/Secondary Prevention Performance Measures Writing Committee was to address 2 important, persistent gaps in the quality of care for patients with CVD: namely, inadequate referral rates to CR programs and the need for minimum performance standards for such CR programs. Currently, a minority of patients receive CR services and secondary prevention services due, in general, to a number of patient-, provider-, and health care system-related barriers. The Writing Committee designed performance measurement sets that hold health care providers, CR program staff members, and leaders of health care systems accountable for the ultimate goal of linking eligible patients to the appropriate CR services following a qualifying CVD event.

The Writing Committee focused its attention on two general performance measurement sets: 1) referral of eligible patients to an outpatient CR program, and 2) delivery of appropriate CR services by CR programs. The first performance measure is designed to be used as a plug-in component to other performance measurement sets for which CR referral is deemed appropriate (e.g., post-MI, post-CABG, post-PCI). The second performance measurement set is designed to clarify structure- and process-based performance measures that serve as a standard for CR programs as they work to continually improve the quality of care provided to their patients with CVD and thereby optimize their patients' health-related outcomes.

The Writing Committee did not include performance measures for all patient groups that may benefit from CR services, but focused on those groups of patients with the most current scientific evidence and other supporting evidence for benefits from CR. Other patient groups, including those patients who have undergone heart valve surgery or who have received heart or heart/lung transplantation, are also appropriate for CR referral. In addition, there is growing evidence for the benefits of CR in persons with other cardiovascular conditions, including heart failure and peripheral vascular disease. As more evidence becomes available for the benefits of CR in these patient groups, they will be included in future iterations of the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Sets.

To be effective, the recommendations of the Writing Committee will need to be adapted, adopted, and implemented by health care systems, health care providers, health insurance carriers, chronic disease management organizations, and other groups in the health care field that have responsibility for the delivery of care to persons with CVD.

Table 2. Sample Data Collection Tools for the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set B

American Association of Cardiovascular and Pulmonary Rehabilitation, American College of Cardiology, and American Heart Association Cardiac Rehabilitation/Secondary Prevention Program Performance Measurement Set Data Collection Flow Sheet (ideally collected prospectively)					
Patient Name or Code:		Birth Date:			
Gender: <input type="checkbox"/> M <input type="checkbox"/> F		Date of event(s):			
Diagnosis: <input type="checkbox"/> MI <input type="checkbox"/> CABG <input type="checkbox"/> Angina <input type="checkbox"/> Valve repair or replacement <input type="checkbox"/> PCI <input type="checkbox"/> Transplantation <input type="checkbox"/> CHF					
Race/Ethnicity: <input type="checkbox"/> African American <input type="checkbox"/> Asian American <input type="checkbox"/> Native American <input type="checkbox"/> Non-White Hispanic <input type="checkbox"/> White <input type="checkbox"/> Other					
Risk Category <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High					
	Target Goal	Initial Assessment	Intervention Plan and Communication	Reassessment Prior to Completion of Program	Changes in Intervention Plan and Communication
Date					
Tobacco Use	Complete cessation of tobacco use	<input type="checkbox"/> Never <input type="checkbox"/> Recent (quit less 6 months ago) <input type="checkbox"/> Current	<i>Complete only if current or recent tobacco use</i> <input type="checkbox"/> Individual education and counseling <i>or</i> <input type="checkbox"/> Referral to a tobacco cessation program <i>and</i> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Abstaining <input type="checkbox"/> Smoking	<i>Complete only if still smoking</i> <input type="checkbox"/> Individual education and counseling <i>or</i> <input type="checkbox"/> Referral to a tobacco cessation program <i>and</i> <input type="checkbox"/> Health care provider notified
Blood Pressure Control	<140/90 mm Hg or <130/80 mm Hg if patient has diabetes or chronic kidney disease	<input type="checkbox"/> Patient with diagnosis of treated or untreated hypertension <input type="checkbox"/> Not hypertensive	<i>Complete only if patient has a diagnosis of hypertension:</i> Education completed: <input type="checkbox"/> Target BP goal <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification	<input type="checkbox"/> Intermittent monitoring of BP during CR	<input type="checkbox"/> Policy in place concerning communication with health care providers, including thresholds for communication
Lipid Control	For CVD and CVD equivalents: LDL-C <100 mg/dL if triglycerides are >200 mg/dL, non-HDL-C should be <130 mg/dL	<input type="checkbox"/> Optimal control <input type="checkbox"/> Suboptimal control	<i>Applies to all patients with CVD:</i> Education completed: <input type="checkbox"/> Target lipid goals <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification	<i>Complete only if suboptimal control on initial assessment:</i> <input type="checkbox"/> Patient encouraged to contact health care provider about reassessment of lipid control	<input type="checkbox"/> Policy is in place to communicate with health care providers as needed
Physical Activity Habits	30+ min, minimum 5 d per week	<input type="checkbox"/> Optimal habits <input type="checkbox"/> Suboptimal habits	<input type="checkbox"/> Education completed concerning optimal physical activity habits <i>Complete only if habits are suboptimal</i> <input type="checkbox"/> Intervention plan developed with the patient	<input type="checkbox"/> Optimal habits <input type="checkbox"/> Suboptimal habits	<i>Complete only if habits remain suboptimal</i> <input type="checkbox"/> An intervention plan is developed with the patient <input type="checkbox"/> Health care provider notified
Weight Management	Body mass index: 18.5 to 24.9 kg/m ² <i>and</i> Waist circumference: men <40 inches women <35 inches	<input type="checkbox"/> At target <input type="checkbox"/> Above target	<i>Applies to all patients</i> <input type="checkbox"/> Education completed concerning target goals, diet, behavior change, regular physical activity <i>or</i> <input type="checkbox"/> Referral to a weight management program <i>and</i> <input type="checkbox"/> Health care provider notified if above target	<input type="checkbox"/> At target <input type="checkbox"/> Above target	<i>Complete only if remains above target</i> <input type="checkbox"/> Additional education completed for target goals, diet, behavior change, exercise <i>or</i> <input type="checkbox"/> Referral to a weight management program <i>and</i> <input type="checkbox"/> Health care provider notified

Continued on next page

Table 2. Continued

	Target Goal	Initial Assessment	Intervention Plan and Communication	Reassessment Prior to Completion of Program	Changes in Intervention Plan and Communication
Presence or Absence of DM or IFG (fasting blood glucose 110–125 mg/dL)	HbA _{1c} <7%	<input type="checkbox"/> Diagnosis of DM or IFG present <input type="checkbox"/> Diagnosis of DM or IFG absent	<i>Complete only if diabetes mellitus is present:</i> <input type="checkbox"/> Documentation that patient has attended skill training and medical nutrition therapy session or <input type="checkbox"/> Referral to skill training and medical nutrition therapy session or <input type="checkbox"/> Intervention plan recommended which includes: target goals for HbA _{1c} , medical nutrition counseling, and skill training <i>Complete only if IFG is present:</i> <input type="checkbox"/> Education is completed concerning the importance of weight management and physical activity	<i>Complete only if diabetes mellitus or IFG is present:</i> <input type="checkbox"/> Attendance at appropriate education or skill training session	<input type="checkbox"/> A policy is in place concerning communication with appropriate health care professionals including thresholds for notification
Presence or Absence of Depression	Assessment of presence or absence of depression using a valid and reliable screening tool	<input type="checkbox"/> Patient screened for depression <input type="checkbox"/> Patient not screened for depression	<i>Complete only if screening tool indicates possible depression:</i> <input type="checkbox"/> Results discussed with patient and <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Patient re-screened for depression <input type="checkbox"/> Patient not re-screened for depression	<i>Complete only if screening tool indicates possible depression:</i> <input type="checkbox"/> Results discussed with patient and <input type="checkbox"/> Health care provider notified
Exercise Capacity	Assessment of symptom-limited exercise tolerance and development of an individualized exercise prescription	<input type="checkbox"/> Assessment and exercise prescription completed <input type="checkbox"/> Assessment and exercise prescription not completed	<input type="checkbox"/> Exercise prescription communicated to the patient and health care provider	<input type="checkbox"/> Re-assessment and exercise prescription completed <input type="checkbox"/> Re-assessment and exercise prescription not completed	<input type="checkbox"/> Revised exercise prescription communicated to the patient and health care provider
Use of Preventive Medications	Adherence to prescribed preventive medications	<input type="checkbox"/> Patient has been prescribed preventive medications by his/her health care provider(s)	<input type="checkbox"/> Individual education and counseling about the importance of adherence to appropriate preventive medications or <input type="checkbox"/> Group education and counseling about the importance of adherence to appropriate preventive medications	<input type="checkbox"/> Individual or group education completed	<input type="checkbox"/> Patient is encouraged to discuss questions or concerns about prescribed preventive medications with his/her healthcare providers

Target goals are from the 2006 AHA/ACC Secondary Prevention Guidelines (39). Assessment terms and definitions are from the outcomes registry proposal.

BP = blood pressure; CABG = coronary artery bypass grafting; CHF = congestive heart failure; CR = cardiac rehabilitation/secondary prevention; CVD = cardiovascular disease; DM = diabetes mellitus; HDL-C = high-density lipoprotein cholesterol; IFG = impaired fasting glucose; LDL-C = low-density lipoprotein cholesterol; MI = myocardial infarction; PCI = percutaneous coronary intervention.

Such strategies should be part of an overall systems-based approach to minimize inappropriate gaps and variation in patient care, optimize delivery of health-promoting services, and improve patient-centered health outcomes.

Special Thanks: Costas Lambrew, MD, FACC, Tilithia McBride, Joseph Allen, Abigail Lynn, Marie Bass, and Megan Dunn.

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APPENDIX A. CARDIAC REHABILITATION/SECONDARY PREVENTION PERFORMANCE MEASUREMENT SET A**Performance Measure A-1****A-1. Cardiac Rehabilitation Patient Referral From an Inpatient Setting**

All patients hospitalized with a primary diagnosis of an acute myocardial infarction (MI) or chronic stable angina (CSA), or who during hospitalization have undergone coronary artery bypass graft (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery, or cardiac transplantation are to be referred to an early outpatient cardiac rehabilitation/secondary prevention (CR) program.

Numerator	<p>Number of eligible patients with a qualifying event/diagnosis who have been referred to an outpatient CR program prior to hospital discharge or have a documented medical or patient-centered reason why such a referral was not made</p> <p>(Note: The program may include a traditional CR program based on face-to-face interactions and training sessions or may include other options such as home-based approaches. If alternative CR approaches are used, they should be designed to meet appropriate safety standards.</p> <p>A referral is defined as an official communication between the health care provider and the patient to recommend and carry out a referral order to an early outpatient CR program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an early outpatient CR program. This also includes a communication between the health care provider or health care system and the CR program that includes the patient's referral information for the program. A hospital discharge summary or office note may potentially be formatted to include the necessary patient information to communicate to the CR program [the patient's cardiovascular history, testing, and treatments, for instance]. All communications must maintain appropriate confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act [HIPAA].)</p> <p><i>Exclusion Criteria:</i></p> <ul style="list-style-type: none"> • Patient-oriented barriers (patient refusal, for example) • Provider-oriented criteria (patient deemed to have a high-risk condition or a contraindication to exercise, for example) • Health care system barriers (financial barriers or lack of CR programs near a patient's home, for example)
Denominator	Number of hospitalized patients in the reporting period hospitalized with a qualifying event/diagnosis who do not meet any of the exclusion criteria mentioned above
Period of Assessment	Inpatient hospitalization
Method of Reporting	Proportion of health care system's patients with a qualifying event/diagnosis who had documentation of their referral to an outpatient CR program
Sources of Data	Administrative data and/or medical records

Rationale

A key component to outpatient CR program utilization is the appropriate and timely referral of patients. Generally, the most important time for this referral to take place is while the patient is hospitalized for a qualifying event/diagnosis (MI, CSA, CABG, PCI, cardiac valve surgery, or cardiac transplantation).

This performance measure has been developed to help health care systems implement effective steps in their systems of care that will optimize the appropriate referral of a patient to an outpatient CR program.

This measure is designed to serve as a stand-alone measure or, preferably, to be included within other performance measurement sets that involve disease states or other conditions for which CR services have been found to be appropriate and beneficial (e.g., following MI, CABG surgery). This performance measure is provided in a format that is meant to allow easy and flexible inclusion into such performance measurement sets.

Effective referral of appropriate inpatients to an outpatient CR program is the responsibility of the health care team within a health care system that is primarily responsible for providing cardiovascular care to the patient during the hospitalization.

Corresponding Guidelines and Clinical Recommendations

ACC/AHA 2004 Guideline Update for Coronary Artery Bypass Graft Surgery (21)

Class I (for the description of the class of recommendations and level of evidence used in this document, see Table 1)

Cardiac rehabilitation should be offered to all eligible patients after CABG. (Level of Evidence: B)

ACC/AHA Guidelines for the Management of Patients with ST-Elevation Myocardial Infarction (40)

Class I

Cardiac rehabilitation/secondary prevention programs, when available, are recommended for patients with ST-elevation myocardial infarction, particularly those with multiple modifiable risk factors and/or those with moderate- to high-risk patients in whom supervised exercise training is warranted. (Level of Evidence: C)

ACC/AHA 2002 Guideline Update for the Management of Patients with Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction (41)

Class I

Consider the referral of patients who are smokers to a smoking cessation program or clinic and/or an outpatient CR program. (Level of Evidence: B)

ACC/AHA 2002 Guideline Update for the Management of Patients with Chronic Stable Angina (19)

Class I

Comprehensive CR program (including exercise). (Level of Evidence: B)

ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult: Executive Summary (42)

Class I

Exercise training is beneficial as an adjunctive approach to improve clinical status in ambulatory patients with current or prior symptoms of heart failure and reduced left ventricular ejection fraction (LVEF). (Level of Evidence: B)

Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women (22)

Class I

A comprehensive risk-reduction regimen, such as cardiovascular or stroke rehabilitation or a physician-guided home- or community-based exercise training program, should be recommended to women with a recent acute coronary syndrome or coronary intervention, new-onset or chronic angina, recent cerebrovascular event, peripheral arterial disease (Level of Evidence: A), or current/prior symptoms of heart failure and an LVEF <40%. (Level of Evidence: B)

Challenges to Implementation

Identification of all eligible patients in an inpatient setting will require that a timely, accurate, and effective system be in place. Communication of referral information by the inpatient hospital service team to the outpatient CR program represents a potential challenge to the implementation of this performance measure. However, this task is generally performed by an inpatient cardiovascular care team member, such as an inpatient CR team member or a hospital discharge planning team member.

Performance Measure A-2

A-2. Cardiac Rehabilitation Patient Referral From an Outpatient Setting

All patients evaluated in an outpatient setting who within the past 12 months have experienced an acute myocardial infarction (MI), coronary artery bypass graft (CABG) surgery, a percutaneous coronary intervention (PCI), cardiac valve surgery, or cardiac transplantation, or who have chronic stable angina (CSA) and have not already participated in an early outpatient cardiac rehabilitation/secondary prevention (CR) program for the qualifying event/diagnosis are to be referred to such a program.

Numerator	<p>Number of patients in an outpatient clinical practice who have had a qualifying event/diagnosis during the previous 12 months, who have been referred to an outpatient CR program.</p> <p>(Note: The program may include a traditional CR program based on face-to-face interactions and training sessions or other options that include home-based approaches. If alternative CR approaches are used, they should be designed to meet appropriate safety standards. A referral is defined as an official communication between the health care provider and the patient to recommend and carry out a referral order to an outpatient CR program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an outpatient CR program. This also includes a communication from the health care provider and/or health care system to the CR program that includes necessary information for the patient's referral information for the program. A hospital discharge summary or office note may potentially be formatted to include the necessary patient information to communicate to the CR program [the patient's cardiovascular history, testing, and treatments, for instance]. All communications must maintain an appropriate level of confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act [HIPAA].)</p> <p><i>Exclusion Criteria:</i></p> <ul style="list-style-type: none"> • Patient-oriented barriers (patient refusal, for example) • Provider-oriented criteria (patient deemed to have a high-risk condition or a contraindication to exercise, for example) • Health care system barriers (financial barriers or lack of CR programs near a patient's home, for example)
Denominator	Number of patients in an outpatient clinical practice who have had a qualifying event/diagnosis during the previous 12 months and who do not meet any of the exclusion criteria mentioned in the Numerator section above
Period of Assessment	Twelve months following a qualifying event/diagnosis
Method of Reporting	Proportion of patients in an outpatient practice who have had a qualifying event/diagnosis during the past 12 months and have been referred to a CR program
Sources of Data	Administrative data and/or medical records

Rationale

Cardiac rehabilitation services have been shown to help reduce morbidity and mortality in persons who have experienced a recent coronary artery disease event, but these services are used in less than 30% of eligible patients (26). A key component to CR utilization is the appropriate and timely referral of patients to an outpatient CR program. While referral takes place generally while the patient is hospitalized for a qualifying event (MI, CSA, CABG, PCI, cardiac valve surgery, or heart transplantation), there are many instances in which a patient can and should be referred from an outpatient clinical practice setting (e.g., when a patient does not receive such a referral while in the hospital, or when the patient fails to follow through with the referral for whatever reason).

This performance measure has been developed to help health care systems implement effective steps in their systems of care that will optimize the appropriate referral of a patient to an outpatient CR program.

This measure is designed to serve as a stand-alone measure or, preferably, to be included within other performance measurement sets that involve disease states or other conditions for which CR services have been found to be appropriate and beneficial (e.g., following MI, CABG surgery). This performance measure is provided in a format that is meant to allow easy and flexible inclusion into such performance measurement sets.

Referral of appropriate outpatients to a CR program is the responsibility of the health care provider within a health care system that is providing the primary cardiovascular care to the patient in the outpatient setting.

Corresponding Guidelines and Clinical Recommendations

See Clinical Recommendations section from Performance Measure A-1 above.

Challenges to Implementation

Identification of all eligible patients in an outpatient clinical practice will require that a timely, accurate, and effective system be in place. Communication of referral information by the outpatient clinical practice team to the outpatient CR program represents a potential challenge to the implementation of this performance measure.

APPENDIX B. CARDIAC REHABILITATION/SECONDARY PREVENTION PERFORMANCE MEASUREMENT SET B**Performance Measure B-1****B-1. Structure-Based Measurement Set**

The cardiac rehabilitation/secondary prevention (CR) program has policies in place to demonstrate that:

1. A physician-director is responsible for the oversight of CR program policies and procedures and ensures that policies and procedures are consistent with evidence-based guidelines, safety standards, and regulatory standards (43). This includes appropriate policies and procedures for the provision of alternative CR program services, such as home-based CR.
2. An emergency response team is immediately available to respond to medical emergencies (44).
 - A. In a hospital setting, physician supervision is presumed to be met when services are performed on hospital premises (45).
 - B. In the setting of a free-standing outpatient CR program (owned/operated by a hospital, but not located on the main campus), a physician-directed emergency response team must be present and immediately available to respond to emergencies.
 - C. In the setting of a physician-directed clinic or practice, a physician-directed emergency response team must be present and immediately available to respond to emergencies.
3. All professional staff have successfully completed the National Cognitive and Skills examination in accordance with the AHA curriculum for basic life support (BLS) with at least one staff member present who has completed the National Cognitive and Skills examination in accordance with the AHA curriculum for advanced cardiac life support (ACLS) and has met state and hospital or facility medico-legal requirements for defibrillation and other related practices (43,46,47).
4. Functional emergency resuscitation equipment and supplies for handling cardiovascular emergencies are immediately available in the exercise area (44).

Numerator	The number of CR programs in the health care system that meet these structure-based performance measure criteria
Denominator	All CR programs within a health care system
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Written program policies

Rationale

The delivery of CR services is physician-directed and provided by a multidisciplinary staff of health care professionals. A system for communication between a physician-director with expertise in CVD management and a referring or primary physician enhances the program's success in helping that patient achieve individualized target goals. It is the responsibility of the physician-director to assure that the information and instruction given to patients in CR is consistent with the most current clinical practice guidelines.

There is a growing trend among patients referred to and completing early outpatient CR to be older, at higher risk, and have more chronic comorbidities (48). Medical supervision is the most important day-to-day safety factor in CR (43). Personnel and equipment for ACLS are essential to the adequate delivery of emergency care for patients who experience cardiac arrest or other life-threatening events during CR sessions.

Although rare, cardiovascular emergencies can occur during exercise training in CR programs. Studies suggest that the incidence of cardiac arrest requiring defibrillation is approximately 1 arrest every 100,000 patient-hours (49). Practice guidelines for management of cardiac arrest include the use of BLS and ACLS strategies, such as early defibrillation (17,43). Such strategies have been shown to help improve outcomes in persons who experience cardiac arrest (50).

Some CR programs seek certification of their program by health care organizations, such as AACVPR, in order to show that they meet certain standards for the delivery of CR services. Such a certification process, while outside the scope of this document, may result in documentation of a program's ability to meet this (B-1) and other CR performance measures mentioned in this document. Currently, for instance, CR program certification through AACVPR requires that all of the above policies (Items 1 to 4 above) are in place and operational.

Corresponding Guidelines and Clinical Recommendations

Medical Director Responsibilities for Outpatient Cardiac Rehabilitation/Secondary Prevention Programs (43)

(No class of recommendation or level of evidence given)

There is a physician-director responsible for program oversight and to ensure that policies and procedures are consistent with evidence-based guidelines, safety standards, and regulatory standards.

AACVPR Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs (51)

(No class of recommendation or level of evidence given)

All professional staff have completed BLS training; at least 1 staff member is present who has successfully completed training in ACLS.

Medical supervision for moderate- to high-risk patients will be provided by a physician, registered nurse, or other appropriately trained staff member who has successfully completed AHA curriculum for ACLS and has met state and hospital or facility medico-legal requirements for defibrillation and other related practices.

Exercise Standards for Testing and Training: A Statement for Health Professionals From the American Heart Association. AHA Scientific Statement (52)

(No class of recommendation or level of evidence given)

An emergency response team is immediately available to respond to medical emergencies.

CMS National Coverage Determination for Cardiac Rehabilitation Programs (45)

(No class of recommendation or level of evidence given)

Functional emergency resuscitation equipment and supplies for handling cardiovascular emergencies are immediately available in the exercise area.

Challenges to Implementation

Adherence to this measure requires the engagement of a physician-director who is accountable for policy development and implementation.

Performance Measure B-2**B-2. Assessment of Risk for Adverse Cardiovascular Events**

The cardiac rehabilitation/secondary prevention (CR) program has the following processes in place:

1. Documentation, at program entry, that each patient undergoes an assessment of clinical status (e.g., symptoms, medical history) in order to identify high-risk conditions for adverse cardiovascular events.
2. A policy to provide recurrent assessments for each patient during the time of participation in the CR program in order to identify any changes in clinical status that increase the patient's risk of adverse cardiovascular events. If such findings are noted, the CR staff contacts the program's physician director and/or the patient's primary health care provider according to thresholds for communication included in the policies developed for Performance Measure B-3j.

Numerator	Number of CR programs in the health care system that meet the performance measure for assessment of risk for adverse cardiovascular events
Denominator	Number of CR programs in the health care system
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Written program policies

Rationale

A standardized assessment should be performed to identify patients with unstable symptoms and other factors that place the patient at increased risk for adverse cardiovascular events (17).

When high-risk findings are noted, a patient should be considered for prompt evaluation and treatment, and rehabilitation recommendations should be adjusted accordingly.

Recurrent adverse cardiovascular events are relatively common in persons with cardiovascular disease (CVD). In 1 study from Olmsted County, Minnesota, nearly half of patients discharged from the hospital following a myocardial infarction (MI) had a recurrent adverse cardiovascular event in the 3 years following their MI (53).

However, adverse events are rare during CR early after a CVD event, occurring approximately once in every 100,000 patient-hours (49). This safety record is likely due in part to standard procedures that exist in CR programs to frequently screen patients for signs and symptoms that increase their risk for adverse cardiovascular events (17,50). If a CR participant develops abnormal cardiovascular signs (significant arrhythmias or blood pressure abnormalities, for example) or symptoms (exertional chest pain, for instance) they typically receive prompt evaluation and care.

Published reports suggest limited accuracy of the risk stratification methods from the AACVPR, ACC/AHA, and the American College of Physicians in identifying patients at risk for adverse events during CR sessions (54). However, 1 study found that a combination of the AACVPR criteria with a comorbidity index helped improve the accuracy of risk stratification, particularly among female patients (55). A significant limitation to these studies is the fact that patients identified at high risk undergo additional evaluation and treatment to lower their risk, thereby dampening the ability of such screening measures to accurately identify individuals at increased risk of adverse cardiovascular events.

This performance measure does not cover the assessment of modifiable risk factors, such as blood pressure, cholesterol, and diabetes. Assessment of modifiable risk factors related to CVD progression and recurrent CVD events is covered in Performance Measure B-3.

Corresponding Guidelines and Clinical Recommendations

AACVPR Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs (51)

(No class of recommendation or level of evidence given)

All cardiac patients entering exercise rehabilitation should be stratified according to the risk for the occurrence of cardiac events during exercise.

Exercise Standards for Testing and Training: A Statement for Health Care Professionals From the American Heart Association (52)

(No class of recommendation or level of evidence given)

Screening procedures can be used that identify an individual who is at risk for an exercise-related cardiac event, which may be helpful in reducing these occurrences.

After the medical evaluation is complete, subjects can be classified by risk on the basis of their characteristics. This classification is used to determine the need for subsequent supervision and the level of monitoring required.

Performance Measure B-3**B-3. Individualized Assessment and Evaluation of Modifiable Cardiovascular Risk Factors, Development of Individualized Interventions, and Communication With Other Health Care Providers**

This performance measure includes 10 individual sub-measures for the evaluation of modifiable cardiovascular risk factors, development of individualized interventions, and communication with other health care providers concerning these risk factors and interventions.

The rationale for including both recognition *and* intervention for satisfactory fulfillment of these measures is predicated upon the belief that high-quality cardiovascular care requires both the identification and treatment of known cardiovascular risk factors.

An important component of this performance measure is the expectation that the cardiac rehabilitation/secondary prevention (CR) staff communicates with appropriate primary care providers and treating physicians in order to help coordinate risk factor management and to promote life-long adherence to lifestyle and pharmacological therapies. (See Performance Measure B-3j for more specific coverage of communication with the patient's primary health care provider.)

Performance Measure B-3a—Individualized Assessment of Tobacco Use

For each eligible patient enrolled in the CR program, there is documentation that the following criteria have been met:

1. An assessment is made of current and past tobacco use.
2. If current tobacco use is identified, an intervention plan is recommended to the patient and communicated to the primary care provider and/or cardiologist. This plan may include individual education, counseling, and/or referral to a tobacco cessation program.
3. Prior to completion of the CR program, the patient's tobacco use status and tobacco avoidance treatment plan are reassessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for tobacco use
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Cessation of tobacco use is most successful when health care providers work together with patients to identify and implement effective treatment strategies. Persons with CVD who stop smoking reduce their cardiovascular risk by approximately 35% (56,57).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients with Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Goal: Complete cessation. (Level of Evidence: B)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

Goals:

Short-term: Patient will demonstrate readiness to change by initially expressing decision to quit and selecting a quit date. Subsequently, patient will quit smoking and all tobacco use, and adhere to pharmacological therapy (if prescribed), and practice relapse prevention strategies; patient will resume cessation plan as quickly as possible when temporary relapse occurs.

Long-term: Complete abstinence from smoking and use of all tobacco products for at least 12 months (maintenance) from quit date.

AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (58)

(No class of recommendation or level of evidence given)

Goal: Avoid use of (and exposure to) tobacco products.

Related Performance Measurement Sets

Clinical Performance Measures: Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement (59)

Percentage of patients queried 1 or more times during the reporting year about cigarette smoking.

Percentage of patients identified as cigarette smokers who received smoking cessation intervention during the reporting year.

Challenges to Implementation

This measure relies on patient self-report.

Performance Measure B-3b—Individualized Assessment of Blood Pressure (BP) Control

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. An assessment is made of BP control, with target goals defined by the AHA/ACC secondary prevention guidelines.
2. For patients with a diagnosis of hypertension, an intervention plan is developed. This should include education about target BP goals, medication compliance, lifestyle modification for optimal dietary and physical activity habits, and weight control.
3. During the CR program, BP control is reassessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for BP control
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

The BP levels represent a strong, consistent, continuous, independent, and etiologically relevant risk factor for cardiovascular and renal disease. Optimal control of BP has a beneficial impact on lowering cardiovascular risk (39,57).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients with Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Goal: <140/90 mm Hg or <130/80 mm Hg if patient has diabetes or chronic kidney disease. (Level of Evidence: B, for lifestyle modification; A, for pharmacological treatment)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (58)

(No class of recommendation or level of evidence given)

Goal: Continued assessment and modification of intervention until normalization of BP.

AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (58)

(No class of recommendation or level of evidence given)

Goal: Aim for a normal BP.

Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. National High Blood Pressure Education Program (60)

(No class of recommendation or level of evidence given)

Treating systolic BP and diastolic BP to targets that are less than 140/90 mm Hg is associated with a decrease in CVD complications. In patients with hypertension with diabetes or renal disease, the BP goal is less than 130/80 mm Hg.

Related Performance Measurement Sets

Clinical Performance Measures: Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement (58)

Percentage of patients who had a BP measurement during the last office visit.

Performance Measure B-3c—Individualized Assessment of Optimal Lipid Control

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. An assessment of blood lipid control and use of lipid-lowering medications, with target goals defined by the AHA/ACC secondary prevention guidelines.
2. For patients with a diagnosis of hyperlipidemia, an intervention plan has been recommended to the patient. This should include education about target lipid goals, importance of medication compliance, lifestyle modification for optimal dietary and regular physical activity habits, and weight control.
3. Prior to completion of the CR program, lipid control and the lipid management plan, including lifestyle modification, are reassessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for lipid control
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Multiple clinical trials have shown the benefit of lipid-lowering agents and lifestyle modification for patients with documented cardiovascular disease (39). A more aggressive low-density lipoprotein (LDL) target goal of <70 mg/dL should be considered for persons with multiple cardiovascular risk factors, particularly when they are under suboptimal control (e.g., a patient with coronary artery disease who continues to smoke).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Goal: Low-density lipoprotein-cholesterol (LDL-C) <100 mg/dL; If triglycerides are >200 mg/dL, non-high-density lipoprotein cholesterol (HDL-C) should be <130 mg/dL. (Level of Evidence: B, for lifestyle modification; A, for pharmacological treatment)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

Goals:

Short-term: Continued assessment and modification of intervention until LDL <100 mg/dL (further reduction to a goal <70 mg/dL is considered reasonable).

Long-term: LDL <100 mg/dL (further reduction to a goal <70 mg/dL is considered reasonable). Secondary goal: non-HDL-C <130 mg/dL (further reduction to a goal of <100 mg/dL is considered reasonable).

AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (58)

(No class of recommendation or level of evidence given)

Goal: Aim for recommended levels of LDL-C, HDL-C, and triglycerides.

Related Performance Measurement Sets

Clinical Performance Measures. Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement (59)

Percentage of patients receiving at least one lipid profile during the reporting year. Percentage of patients who are receiving a statin (based on current ACC/AHA guidelines).

Performance Measure B-3d—Individualized Assessment of Physical Activity Habits

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. An assessment of current physical activity habits.
2. If physical activity habits at time of program entry do not meet suggested guidelines as defined by the AHA/ACC secondary prevention guidelines, then recommendations to improve physical activity habits are given to the patient.
3. Prior to completion of the CR program, physical activity habits and the physical activity intervention plan are reassessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for physical activity habits
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	A standardized method for assessing physical activity is to be used, with results entered into an inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Adherence to regular physical activity has been associated with a 20% to 30% reduction in all-causes mortality in cardiovascular disease (CVD) patients (9).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Goal: 30 min, 7 d per week (minimum 5 d per week). (Level of Evidence: B)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (56)

(No class of recommendation or level of evidence given)

Goal: 30 to 60 min per d of moderate-intensity physical activity on 5 or more (preferably most) days of the week.

Exercise and Physical Activity in the Prevention and Treatment of Atherosclerotic Cardiovascular Disease: A Statement From the Council on Clinical Cardiology (Subcommittee on Exercise, Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity) (61)

(No class of recommendation or level of evidence given)

Health professionals should prescribe physical activity programs commensurate with those recommended by the Centers for Disease Control and Prevention and the American College of Sports Medicine, that is, 30 min or more of moderate-intensity physical activity such as brisk walking on most, and preferably all, days of the week.

Challenges to Implementation

Community-based exercise may not utilize modalities designed for elderly patients and those with neurological and musculoskeletal disease, making continued regular physical activity a challenge for some patients.

Performance Measure B-3e—Individualized Assessment of Weight Management

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. An assessment of body weight/composition, including the measurement of either body mass index (BMI) or waist circumference with targets as defined by the AHA/ACC secondary prevention guidelines (39).
2. If the body weight/composition measure(s) is (are) above recommended goal(s), then an intervention plan is recommended to the patient. This should include education about target goals and lifestyle modification including a healthy diet, behavior change, and regular physical activity and/or referral to a weight management program.
3. Prior to completion of the CR program, body weight/composition and the intervention plan are reassessed and communicated to the patient as well as the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for assessment of weight management
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Obesity is an independent risk factor for cardiovascular disease (CVD) and adversely affects CVD risk factors. By adhering to diet and lifestyle recommendations, patients can substantially reduce their risk of cardiovascular disease (58).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Goal: BMI, 18.5 to 24.9 kg/m²; waist circumference, men <40 inches, women <35 inches. (Level of Evidence: B)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

Goals:

Short-term: Continued assessment and modification of interventions until progressive weight loss is achieved. Provide referral to specialized, validated nutrition weight loss programs if weight goals are not achieved.

Long-term: Adherence to diet and physical activity/exercise program aimed toward attainment of established weight goal.

AHA Scientific Statement: Diet and Lifestyle Recommendations: Revision 2006 (58)

(No class of recommendation or level of evidence given)

Goal: Aim for a healthy body weight.

(No class of recommendation or level of evidence given)

Goals: Balance caloric intake and physical activity to achieve and maintain a healthy body weight; consume a diet rich in vegetables and fruits; choose whole-grain, high-fiber foods; consume fish, especially oily fish, at least twice a week; limit intake of saturated fat to <7% of energy, trans fat to <1% of energy, and cholesterol to <300 mg/day by choosing lean meats and vegetable alternatives, fat-free (skim) or low-fat (1% fat) dairy products and minimize intake of partially hydrogenated fats; minimize intake of beverages and foods with added sugars; choose and prepare foods with little or no salt; if you consume alcohol, do so in moderation; and when you eat food prepared outside of the home, follow these diet and lifestyle recommendations.

Challenges to Implementation

Weight management relies on patient compliance with diet and lifestyle recommendations.

Performance Measure B-3f—Individualized Assessment of the Diagnosis of Diabetes Mellitus (DM) or Impaired Fasting Glucose (IFG)

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. Assessment of the diagnosis of IFG and DM, with definitions as described in the most recent American Diabetes Association Standards of Medical Care in Diabetes Position Statement (62).
2. If the patient has a diagnosis of IFG or DM, then an intervention plan is recommended to the patient for glycemic monitoring during exercise, for glycemic goals, and for recommendations concerning medical nutrition therapy and/or skill training sessions (if not previously attended).
3. Prior to completion of the CR program, DM/IFG status, and the DM/IFG intervention plan are reassessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for DM/IFG
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

The presence of DM or IFG has been linked to unfavorable long-term cardiovascular outcomes. Because improved glycemic control has been shown to favorably affect cardiovascular morbidity and mortality (61), the CR program setting is an ideal environment to educate patients about the implications of DM or IFG and to initiate the behavior patterns that foster improved glycemic control (56).

Corresponding Guidelines and Clinical Recommendations

Physical Activity/Exercise and Type 2 Diabetes: A Consensus Statement from the American Diabetes Association (63)

(No class of recommendation given)

Those who take insulin or secretagogues should check capillary blood glucose before, after, and several hours after completing a session of physical activity, at least until they know their usual glycemic responses to such activity. (Level of Evidence: E, from the American Diabetes Association (ADA) classification system, in which Level of Evidence: E is based on expert consensus or clinical experience)

American Diabetes Association Standards of Medical Care in Diabetes-2006 (62)

(No class of recommendation given)

Lowering HbA_{1c} has been associated with a reduction of microvascular and neuropathic complications of diabetes. (Level of Evidence: A, from the ADA classification system, in which Level A is based on clear evidence from well-conducted, generalizable, randomized controlled trials that are adequately powered.)

People with DM should receive individualized medical nutrition therapy (MNT) as needed to achieve treatment goals, preferably provided by a registered dietitian familiar with the components of diabetes MNT. (Level of Evidence: B, from the ADA classification system, in which Level B is based on supportive evidence from well-conducted cohort studies.)

People with DM should receive DM self-management education according to national standards when their DM is diagnosed and as needed thereafter. (Level of Evidence: B, see above)

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Initiate lifestyle and pharmacotherapy to achieve near-normal HbA_{1c}. (Level of Evidence: B) Begin vigorous modification of other risk factors. (Level of Evidence: B)

Coordinate diabetic care with patient's primary care physician or endocrinologist. (Level of Evidence: C)

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

Educate patient and staff to be alert for signs/symptoms of hypoglycemia or hyperglycemia and provide appropriate assessment and interventions.

Teach and practice self-monitoring skills for use during unsupervised exercise. Refer to registered dietitian for MNT. Consider referral to certified diabetic educator for skill training, medication instruction, and support groups.

Challenges to Implementation

Patients may not be aware that they have IFG or DM. In addition, it may be difficult for CR staff to obtain medical records to verify or refute the diagnosis. Given the latter, either patient self-report or medical records, if available, may be used to meet these criteria.

Performance Measure B-3g—Individualized Assessment of the Presence or Absence of Depression

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. Assessment of the presence or absence of depression, using a valid and reliable screening tool.
2. If clinical depression is suspected as a result of screening, this has been discussed with the patient.
3. If clinical depression is suspected as a result of screening, the primary care provider and/or mental health care provider have been notified.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for depression
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Depression is highly prevalent among patients following acute cardiac events, with 20% to 45% of patients suffering significant levels of depressive symptoms after an acute myocardial infarction (MI) (64,65). Depression has been shown to be a powerful, independent risk factor for cardiac mortality after an acute MI or unstable angina (66,67). Several studies suggest that depressed patients with CVD benefit from CR programs by improving coping skills and self-image, reducing biological risk factors such as social isolation and smoking, providing emotional support, and improving quality of life scores (68).

Corresponding Guidelines and Clinical Recommendations

Depression Screening in Cardiac Rehabilitation: AACVPR Task Force Report (69)

(No class of recommendation or level of evidence given)

The AACVPR recommends that appropriately trained health care professionals in the CR setting assess for depression using a valid and reliable screening tool and ask specific questions about depression as a part of the intake assessment and/or clinical interview. They also recommend that cardiac rehabilitation professionals communicate findings indicating possible clinical depression to referring physicians, facilitate referral of patients for appropriate treatment, and periodically reassess therapeutic progress.

Challenges to Implementation

Depression screening includes patient self-report, but validated self-report tools are available to help facilitate screening for depression.

Performance Measure B-3h—Individualized Assessment of Exercise Capacity

For each eligible patient enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criteria have been met:

1. Assessment of maximal or submaximal exercise capacity, using at least 1 of several possible assessment methods that has standard end points as defined by groups such as the American College of Sports Medicine and ACC/AHA practice guidelines and scientific statements (52,70)
2. An individualized exercise prescription, based on the assessment of exercise capacity, is recommended to the patient and communicated to the primary care provider and/or cardiologist.
3. Prior to completion of the CR program, change in exercise capacity is re-assessed and communicated to the patient as well as to the primary care provider and/or cardiologist.

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for assessment of exercise capacity
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

Meta-analyses and systematic reviews have concluded that comprehensive, exercise-based CR reduces mortality rates in patients with cardiovascular disease (CVD) (2,3,5–7,9–11).

Corresponding Guidelines and Clinical Recommendations

ACC/AHA 2002 Guidelines Update for Exercise Testing: Summary Article (71)

Class I

Assessment of symptom-limited exercise tolerance for activity prescription.

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

Develop a documented individualized exercise prescription for aerobic and resistance training that is based on evaluation findings, risk stratification, patient and program goals, and resources. Exercise prescription should specify frequency, intensity, duration, and modalities.

Working Group on Cardiac Rehabilitation and Exercise Physiology of the European Society of Cardiology Position Paper (15)

(No class of recommendation or level of evidence given)

Moderate- to high-risk cardiac patients must undergo an individualized exercise program and receive an exercise prescription within the limits imposed by their disease.

Challenges to Implementation

In some cases, results of recent stress tests are available to assess exercise capacity, but this is not universal. The CR program may use an alternative assessment of exercise capacity, such as submaximal treadmill testing or a 6-min walk.

Performance Measure B-3i—Individualized Adherence to Preventive Medications

For each eligible patient with coronary artery disease enrolled in the cardiac rehabilitation/secondary prevention (CR) program, there is documentation that the following criterion has been met:

1. The patient has received individual or group education concerning the importance of adherence to preventive medications that are described in the AHA/ACC secondary prevention guidelines. (Note: Patients should be encouraged to discuss questions or concerns about prescribed preventive medications with their health care providers.)

Numerator	Number of patients in the health care system's CR program(s) who meet the performance measure for adherence to preventive medications
Denominator	Number of patients in the health care system's CR program(s)
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Electronic- or paper-based prospective flow sheet (preferred) or retrospective medical record review

Rationale

The use of preventive medications that may or may not be tied to a specific risk factor (aspirin, omega-3 fatty acids, beta blockers, and angiotensin-converting enzyme inhibitors (ACEI)/angiotensin-receptor blockers (ARB) agents, for instance) are also critically important in reducing recurrent cardiovascular events in patients enrolled in a CR program. A gap in their usage is common, but can be corrected with the help of systematic programs, such as CR programs, that can promote the appropriate use of preventive medications and thereby improve patient outcomes (26).

Corresponding Guidelines and Clinical Recommendations

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (39)

Class I

Use of antiplatelet agents, renin-angiotensin-aldosterone system blockers, and beta blockers. (Level of Evidence: B)

Related Performance Measurement Sets

Clinical Performance Measures: Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement (59)

Percentage of patients receiving: antiplatelet therapy, drug therapy for lowering cholesterol, or beta-blocker therapy post-myocardial infarction.

ACC/AHA STEMI/NSTEMI Clinical Performance Measures (72)

Acute myocardial infarction patients without contraindications who are prescribed the following drug at discharge: 1) aspirin, 2) beta blocker, 3) lipid-lowering therapy, or 4) ACEI or ARB for left ventricular systolic dysfunction.

Challenges to Implementation

Rehabilitation teams need to understand how current clinical practice guidelines relate to individual patients in order to optimize education.

Performance Measure B-3j—Communication With Health Care Providers

There is a policy in place to ensure communication with health care providers, including individual patient status related to each modifiable risk factor at entrance to and completion of the cardiac rehabilitation/secondary prevention (CR) program, as well as when thresholds are met for more frequent or urgent communication concerning suboptimal risk factor control.

Numerator	The number of CR programs in the health care system that meet the performance measure for communication with health care providers
Denominator	The number of CR programs in the health care system
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Written program policies

Rationale

Optimal communication between the CR team and appropriate health care providers will promote timely adjustments in a patient's medical regimen, leading to improved risk factor modification.

Corresponding Guidelines and Clinical Recommendations

AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

It is essential to the success of any program that each of these interventions is performed in concert with the patient's primary care provider and/or cardiologist, who will subsequently supervise and refine these interventions over the long term.

Medical Director Responsibilities for Outpatient Cardiac Rehabilitation/Secondary Prevention Programs (43)

(No class of recommendation or level of evidence given)

By working closely with referring physicians, the cardiac rehabilitation team can assist the patient in reaching target goals more effectively.

Challenges to Implementation

CR programs may not have access to all data related to risk factor control, such as most recent lipid profile, HbA_{1c}, or patient-specific contraindications to preventive medications.

Performance Measure B-4**B-4. Monitor Response to Therapy and Document Program Effectiveness**

For each cardiac rehabilitation/secondary prevention (CR) program in a health care system, a written policy is in place to:

1. Document the percentage of patients for whom the CR program has received a formal referral request who actually enroll in the program.
2. Document for each patient a standardized plan to assess completion of the prescribed course of CR as defined on entrance to the program.
3. Document for each patient a standardized plan to assess outcome measurements at the initiation and again at the completion of CR, including at least 1 outcome measure for the core program components as outlined in the Cardiac Rehabilitation/Secondary Prevention Performance Measure Set B, Performance Measure 3.
4. Describe the program's methodology to document program effectiveness and initiate quality improvement strategies.

Numerator	Number of CR programs in the health system that meet this performance measure for monitoring response to therapy and documenting program effectiveness
Denominator	Number of CR programs in the health care system
Period of Assessment	Per reporting year
Method of Reporting	Inclusive data collection tracking sheet
Sources of Data	Written program policies

Rationale

Continuous quality improvement relies on collecting information about individual response to therapy as well as analysis of aggregate data to assess program effectiveness. The recommendation is that each CR program provides evidence of a standardized method to document individual patient outcomes on completion of the course of CR as defined on intake to the CR program which, in aggregate, will permit documentation of program effectiveness and quality improvement initiative success.

Outcome assessment and evaluation provides evidence of effectiveness of therapeutic interventions. According to a recent report of the National Heart, Lung, and Blood Institute, this enhances the migration of best practice to clinical practice, improves decision making and the quality of care provided, and supports the optimal allocation of health care resources for all patients (73).

The 2004 AACVPR Consensus Statement document suggests that "no single form [or] assessment protocol . . . will fit the needs of all programs" (74). The document gives examples of outcome measures for evaluating program effectiveness and communicating with other health care professionals, providing the basis for a flexible "structural framework . . . that will guide programs in the development of standardized assessment protocols that fit their specific needs" (74).

Initiation and completion of the prescribed course of CR, as defined on admission assessment, are keys to promoting both life-long behavior change as well as physiologic adaptations from regular exercise. Comprehensive CR programs include core components designed to address secondary prevention issues which can improve with patient self-management. Reassessment of outcome measures after completion of CR can help programs assess their performance in each of these core components. It is anticipated that programs would assess different core components outcomes over time, using aggregate results to assess issues such as overall program performance, alternative approaches to programming, and programming in underserved populations such as minorities, women, and the elderly.

Corresponding Guidelines and Clinical Recommendations

AACVPR Consensus Statement. Outcomes Evaluation in Cardiac Rehabilitation/Secondary Prevention Programs: Improving Patient Care and Program Effectiveness (74)

(No class of recommendation or level of evidence given)

Cardiac rehabilitation programs need to establish a standardized method of data collection and maintain effective communication with other health care providers who also provide care for the referred patient.

Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update (57)

(No class of recommendation or level of evidence given)

The assessment and evaluation of at least 1 of the expected outcome measures is recommended for each of the core cardiac rehabilitation components.

APPENDIX C. SAMPLE RATING FORM AND RATING FORM GUIDE

Name of Measure:

Clinical Rationale:

Numerator:

Denominator:

Measure:

Rate this measure on the following criteria.	Disagree		Moderate Agreement		Agree
	1	2	3	4	5
Useful in Improving Patient Outcomes					
1. Evidence-based: The scientific basis of the measure is well established.	1	2	3	4	5
2. Interpretable: The results of the measure are interpretable by practitioners.	1	2	3	4	5
3. Actionable: The measure addresses an area that is under the practitioner's control.	1	2	3	4	5
Measure Design					
1. Denominator: The patient group to whom this measure applies (denominator) is clinically meaningful.	1	2	3	4	5
2. Numerator: The definition of conformance for this measure is clinically meaningful.	1	2	3	4	5
3. Validity:					
a. The measure appears to measure what it is intended to (face validity).	1	2	3	4	5
b. The measure captures most meaningful aspects of care (content validity).	1	2	3	4	5
c. The measure correlates well with other measures of the same aspect of care (construct validity).	1	2	3	4	5
4. Reliability: The measure is likely to be reproducible across organizations and delivery settings.	1	2	3	4	5
Measure Implementation					
1. Feasibility:					
a. The data required for the measure are likely to be obtained with reasonable effort.	1	2	3	4	5
b. The data required for the measure are likely to be obtained at reasonable cost.	1	2	3	4	5
c. The data required for the measure are likely to be obtained within the period allowed for data collection.	1	2	3	4	5

Overall Assessment

Considering your assessment of this measure on all dimensions above, rate this measure overall for inclusion into the performance measurement set.	Do Not Include		Could Include		Must Include
	1	2	3	4	5

Rating Form Guide	
Attribute of Performance	Considerations
Useful in Improving Patient Outcomes	
1. Evidence-based: The scientific basis of the measure is well established.	This can be confirmed by explicit reference to a published clinical practice guideline.
2. Interpretable: The results of the measure are interpretable by practitioners.	This is your assessment of the degree with which a provider can clearly understand what the results mean and can take action if necessary.
3. Actionable: The measure addresses an area that is under the practitioner's control.	This is your assessment of the degree with which a provider is empowered and can influence the activities of the health care system toward improvement.
Measure Design	
1. Denominator: The patient group to whom this measure applies (denominator) is clinically meaningful.	Depending upon intended use of the measure, the data source, any inclusion or exclusion criteria, and sampling frames are explicit. The criteria used must be clinically meaningful. An algorithm for determining the denominator may be present.
2. Numerator: The definition of conformance for this measure is clinically meaningful.	The numerator may be specified using either explicit or implicit criteria. The criteria used must be clinically meaningful. An algorithm for determining the numerator may be present.

Attribute of Performance	Rating Form Guide	Considerations
<p>3. Validity:</p> <ul style="list-style-type: none"> a. The measure appears to measure what it is intended to (face validity). b. The measure captures most meaningful aspects of care (content validity). c. The measure correlates well with other measures of the same aspect of care (construct validity). <p>4. Reliability: The measure is likely to be reproducible across organizations and delivery settings.</p>	<p>This can be confirmed by your judgment of the clarity and comprehensiveness of the measure. For those measures that have been actually tested for validity, you may see indications of specific testing such as comparisons with the results of other methods, criterion or gold standard validity testing, and criterion validity testing. There may also be documentation that the health care construct underlying the measure is associated with important health care processes/outcomes.</p> <p>This can be confirmed by specific tests undertaken by the measure developers. For those measures that have been actually tested for reliability, you may see indications of types of reliability testing such as test–retest reliability, inter-rater reliability, data accuracy checks, and internal consistency analyses. If the measure has not been used in practice, indicate the degree of likelihood that it is reproducible.</p>	
Measure Implementation		
<p>1. Feasibility:</p> <ul style="list-style-type: none"> a. The data required for the measure are likely to be obtained with reasonable effort. b. The data required for the measure are likely to be obtained at reasonable cost. c. The data required for the measure are likely to be obtained within the period allowed for data collection. 	<p>From your perspective, the required data can be typically abstracted from patient charts, or there are national registries and databases readily available. For those measures actually being used, there is information on the data collection approach and the system required to support the measure.</p>	
Overall Assessment		
<p>Considering your assessment of this measure on all dimensions above, rate this measure for overall inclusion in the performance measurement set.</p>	<p>Consider a balance in the continuum of care. Consider overall purpose of the measurement set and the intended user.</p>	

APPENDIX D. AUTHOR RELATIONSHIPS WITH INDUSTRY—AACVPR/ACC/AHA CARDIAC REHABILITATION/SECONDARY PREVENTION PERFORMANCE MEASURES

Writing Committee Member	Research Grant	Speakers' Bureau/ Honoraria/ Expert Witness	Stock Ownership	Consultant/ Advisory Board/ Steering Committee
Randal J. Thomas, MD, MS, FAHA	None	None	None	None
Marjorie King, MD, FAACVPR, FACC	None	None	None	• Healthways
Karen Lui, RN, MS, FAACVPR	None	None	None	None
Neil Oldridge, PhD, FAACVPR	None	None	None	None
Ileana L. Piña, MD, FACC	• Novartis • NIH	• AstraZeneca • Novartis	None	• FDA
John Spertus, MD, MPH, FACC	• Amgen • Atherotech • Roche Diagnostics	None	• Health Outcomes Services • Outcomes Instruments	• Amgen • United Healthcare

AACVPR/ACC/AHA 2007 Performance Measures on Cardiac Rehabilitation for Referral to and Delivery of Cardiac Rehabilitation/Secondary Prevention Services: Endorsed by the American College of Chest Physicians, American College of Sports Medicine, American Physical Therapy Association, Canadian Association of Cardiac Rehabilitation, European Association for Cardiovascular Prevention and Rehabilitation, Inter-American Heart Foundation, National Association of Clinical Nurse Specialists, Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons

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