

**Cardiac Rehabilitation Performance Measurement Sets  
for Referral to and Delivery of Cardiac Rehabilitation  
Program Services**

**AACVPR/ACC/AHA Cardiac Rehabilitation  
Performance Measures**

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## I. Introduction

Over the past four decades, cardiac rehabilitation (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 (1-11) and has been promoted by various healthcare organizations and position statements (1, 2, 12-17). Performance measures for CR services have not been published to date however.

To formalize performance measures for CR services, the AACVPR/ACC/AHA Cardiac Rehabilitation Performance Measure Writing Committee was convened in November 2005. The Writing Committee was given the charge to develop performance measures that cover two 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 preventive services in order to reduce cardiovascular mortality and morbidity and optimize health in persons with CVD, including acute myocardial infarction, status-post coronary revascularization, percutaneous coronary intervention, and transplant or valve surgery. Using the previously published methodology of the American College of Cardiology (ACC) and the American Heart Association (AHA)(18), performance measures were developed, focusing on processes of care that have been documented to help improve patient outcomes. Both inpatient and outpatient settings of cardiovascular care were considered, resulting in performance measures being created for three specific settings: hospitals, office practices, and CR programs.

### *A. Rationale for Cardiac Rehabilitation 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 (3-12, 19). Evidence suggests that the benefits of CR services are as significant in recent years as they were in the pre-thrombolytic era (7, 19). Because of this mounting evidence, a number of healthcare organizations have

1 endorsed the use of CR services in persons with CVD by including provisions for CR in  
2 their practice guidelines and practice management position papers (1, 2, 13-17, 20-26).

- 3 • Despite the known benefits of CR and despite the widespread endorsement of its use,  
4 less than 30% of eligible patients participate in a CR program after a CVD event (27,  
5 28). Reasons for this gap in CR participation are numerous, but the most critical and  
6 potentially most correctable reasons revolve around obstacles in the initial referral of  
7 patients to CR programs. These obstacles can be reduced through the systematic  
8 adoption of standing orders and other similar tools for CR referral for appropriate  
9 hospitalized patients (29). Furthermore, physician accountability associated with the  
10 use of these performance measures may lead to new and novel approaches to improve  
11 referral rates and improve the outcome of patients with CVD.
- 12 • Standards for CR programs have been previously published (30), and a system for CR  
13 program certification exists through the American Association of Cardiovascular and  
14 Pulmonary Rehabilitation (AACVPR) for CR programs that meet their standards of  
15 practice. Unfortunately, since such certification is not required for CR program  
16 operation or for reimbursement purposes, AACVPR certification is obtained by a  
17 relatively small portion of CR programs in the United States. As of October 2006, 973  
18 (37%) CR programs have AACVPR certification, out of an estimated 2621 total  
19 outpatient CR programs that are active in the United States today (31, 32).
- 20 • Recommendations for CR referral and participation are included in many practice  
21 guidelines and position papers regarding the care of persons with CVD, but to date no  
22 groups have included referral to CR services in their CVD-related performance measure  
23 sets. Likewise, there are no currently available performance measure sets that include  
24 measures for the delivery of CR services by outpatient CR programs.

25  
26 Clearly there is a need and also a prime opportunity to reduce the gap in delivery of CR  
27 services to persons with CVD. Such an improvement in CR delivery will require better  
28 approaches in the referral to, enrollment in, and completion of programs in CR. It is anticipated  
29 that the implementation of CR performance measure sets will stimulate such changes in the  
30 clinical practice of preventive and rehabilitative care for persons with CVD.

31



1 The definition for CR in general use today is based on a modification from the original  
2 World Health Organization 1964 definition of CR, which reinforced the observation that CR is  
3 an integral component in the overall management of patients with CVD, that the patient plays a  
4 significant role in the successful outcome of CR, and that CR is an important source of services  
5 aimed at the secondary prevention of CVD events (1-3).

6 Building on this original definition, a number of other complementary definitions of CR  
7 have been promulgated by various organizations including the U.S Public Health Service, the  
8 American Heart Association together with the American Association of Cardiovascular and  
9 Pulmonary Rehabilitation and the Canadian Association of Cardiac Rehabilitation (2, 17). These  
10 updated definitions emphasize the integral role of CR in the secondary prevention of CVD.

11 The definition used by the U.S. Public Health Service and by the Cardiac Rehabilitation  
12 Performance Measure Writing Committee is as follows:

13

14 “Cardiac rehabilitation services are comprehensive, long-term programs involving  
15 medical evaluation, prescribed exercise, cardiac risk factor modification, education, and  
16 counselling. These programs are designed to limit the physiologic and psychological  
17 effects of cardiac illness, reduce the risk for sudden death or re-infarction, control cardiac  
18 symptoms, stabilize or reverse the atherosclerotic process, and enhance the psychosocial  
19 and vocational status of selected patients” (2).

20

21 Cardiac rehabilitation programs are generally divided into three main phases:

22

23 1. **Inpatient CR** (previously known as Phase 1): A program that delivers preventive and  
24 rehabilitative services to hospitalized patients following an index CVD event, such as a  
25 myocardial infarction;

26

27 2. **Early Outpatient CR** (previously known as Phase 2): A program that delivers  
28 preventive and rehabilitative services to patients in the outpatient setting early after a  
29 CVD event, generally within the first 3-6 months after the event but continuing for as  
30 much as one year after the event;

31

1       3. **Late Outpatient CR** (previously known as Phase 3 or Phase 4): A program that  
2       provides longer-term delivery of “maintenance” preventive and rehabilitative services for  
3       patients in the outpatient setting.

4  
5       The main focus of this position paper is on the referral to and delivery of Early Outpatient  
6       CR services principally because it is the component of CR that has been most widely  
7       documented to help reduce risk of CVD mortality among its participants.

8  
9       *B. Definition of Appropriate Patients for Cardiac Rehabilitation*

10  
11       Patients who are considered eligible for CR include those who have experienced one or  
12       more of the following conditions within the previous year:

- 13       • Myocardial infarction/acute coronary syndrome (MI)\*
- 14       • Coronary artery bypass graft surgery (CABG)\*
- 15       • Percutaneous coronary intervention (PCI)\*
- 16       • Stable angina\*
- 17       • Heart valve surgical repair or replacement
- 18       • Heart or heart/lung transplantation

19       The thrust of this document is focused on the management of persons with coronary  
20       artery disease-related conditions (noted above with an asterisk), but CR services are considered  
21       appropriate and beneficial for persons with other conditions as well, including: (1) after heart  
22       valve surgical repair or replacement, and (2) after heart or heart/lung transplantation (as listed  
23       above) (33, 34). Furthermore, growing evidence from published studies suggests a benefit of CR  
24       for persons with chronic heart failure or peripheral arterial disease (35, 36). Recommendations  
25       for use of CR services in these patient populations will depend upon the results of further  
26       research.

27       Persons who are potentially eligible for CR may, in fact, have barriers that limit their  
28       participation in CR. Such barriers include those that are patient-oriented (patient refusal, for  
29       example) and others that are provider-oriented (provider deems the patient ineligible for CR due  
30       to a high risk medical condition and/or an absolute contraindication to exercise, for example)  
31       (37). Patients with such barriers may be excluded from the number of patients who are  
32       considered to be eligible for CR referral (see Appendix B, under “numerator” criteria for

1 assessing the percentage of eligible patients who have been referred to a CR program). It should  
2 be noted, however, that even though some persons may have significant patient- or provider-  
3 oriented barriers to CR referral, nearly all patients with CVD can benefit from at least some  
4 components of a comprehensive, secondary prevention CR program.

5

### 6 *C. Overview of Performance Measures Created*

7

8 Both structure-based and process-based performance measures are included in the  
9 Cardiac Rehabilitation Performance Measurement Sets. While important and related, specific  
10 measures focused on clinical outcomes are not included, due to technical limitations relative to  
11 risk-adjustment, feasibility and expense of data collection. The performance measures that are  
12 included are designed to help health care groups identify potentially correctable and actionable  
13 “upstream” sources of suboptimal clinical care, such as structure- and process-based gaps in CR  
14 services. Details for the dimensions of care included in the Cardiac Rehabilitation Performance  
15 Measure Sets are outlined below.

16

17 1. **Structure-based measures** quantify the infrastructure from which CR is provided and  
18 are based on the provision of appropriate personnel and equipment to satisfy high quality  
19 standards of care for CR services. For example, a structure-based performance measure  
20 for a CR program is one that specifies that a CR program has appropriate personnel and  
21 equipment to provide rapid care in medical emergencies that may occur during CR  
22 program sessions.

23

24 2. **Process-based measures** quantify specific aspects of care and are designed to capture all  
25 relevant dimensions of CR care. For example, a process-based performance measure for  
26 a CR program is one that specifies that all patients in a CR program undergo  
27 comprehensive, standardized assessment of their cardiovascular risk factors upon entry to  
28 the CR program.

29

30 It should also be noted that the Cardiac Rehabilitation Performance Measure Sets have been  
31 designed for three different geographical settings of care—the hospital, physician office, and the  
32 CR program settings. Staff members within each of these areas who help provide care to persons

1 with CVD are held accountable for the various aspects of CR services (referral to, enrollment in,  
2 and delivery of CR services).

3

4 *D. Literature Review and Evidence-base*

5

6 There is substantial evidence to conclude that CR is reasonable and necessary following  
7 MI, CABG surgery, stable angina, heart valve repair or replacement, PCI, and heart or heart/lung  
8 transplant (1). Outpatient, medically supervised CR, as described by the U.S. Public Health  
9 Service, is a comprehensive, long-term intervention including medical evaluation, prescribed  
10 exercise, cardiac risk factor modification, education, and counseling typically initiated 1-3 weeks  
11 after hospital discharge and typically including electrocardiographic monitoring of patients (see  
12 section IIA above)(2).

13 Meta-analyses and systematic reviews (3-11) provide and summarize the extensive  
14 evidence that has been generated from published randomized clinical trials that show that  
15 exercise-based CR services are beneficial for patients with established CVD. These benefits  
16 include improved processes of care and risk factor profiles which are closely linked to  
17 subsequent mortality and morbidity. Pooled data from randomized clinical trials demonstrate a  
18 mortality benefit of approximately 20% to 25% and a trend towards reduction in recurrent MI  
19 over a median follow-up of 12 months and a reduction in hospitalization rate, also over a 12-  
20 month period of time. The weight of the published randomized trial evidence suggests that  
21 comprehensive secondary prevention programs positively impact risk factor profiles, symptom  
22 scores, exercise tolerance and health-related quality of life and functional status in participants.

23

24 *E. Definition and Selection of Measures*

25

26 The Cardiac Rehabilitation Performance Measure Writing Committee initially identified  
27 39 factors from various practice guidelines and other reports that were considered to be potential  
28 performance measures for the Cardiac Rehabilitation Performance Measure Sets (see Table 1 for  
29 standard guidelines that were used to rate the classification of recommendations and level of  
30 evidence for assessing these factors). The group evaluated these 39 factors according to  
31 guidelines established by the American College of Cardiology and American Heart Association  
32 Task Force on Performance Measures (18). After several review and discussion sessions, those

1 measures that were deemed to be most evidence-based, interpretable, actionable, clinically  
2 meaningful, valid, reliable, and feasible were included in the final Performance Measure Sets.  
3 Once these measures were identified, the Writing Committee then discussed and refined, over a  
4 series of months, the definition, content, and other details of each of the selected measures.

5 While most performance measures are designed for a specific condition and phase of a  
6 particular disease, CR referral is applicable and appropriate for a number of different conditions  
7 and phases of CVD. Accordingly, the writing committee created two sets of performance  
8 measures, one related to the appropriate referral of patients to a CR program and another set  
9 related to optimal performance of a CR program itself. In creating the first set, the Writing  
10 Committee sought to create a measure that would be appropriate for insertion into other  
11 performance measure sets for which CR referral would be appropriate (performance measure sets  
12 for care of patients following MI, PCI, or CABG, for example). Figure 1 outlines the overall  
13 organization of these two types of measures and their intended applications.

14

### 15 **III. Measures related to CR Referral**

16

17 The performance measures that are related to the referral of appropriate patients to a CR  
18 program are described below.

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

20

21 Patients who are appropriate for referral to an early outpatient CR program include those  
22 patients who, in the previous year, have had any of the diagnoses listed in Section IIB. CR  
23 services are generally most beneficial when delivered soon after the index hospitalization.  
24 However, there are often clinical, social, and logistical reasons which delay enrollment in cardiac  
25 rehabilitation. For this reason, many third party payers allow cardiac rehabilitation services to  
26 begin up to 6 to 12 months following a cardiac event. Because patients can be referred to CR at  
27 varying times following a CVD event, parties responsible for the referral of patients to CR  
28 include not only hospitals and healthcare systems but also physician practices and other  
29 healthcare settings with primary responsibility for the care of patients after a CVD event.

30

31

32

1        *B. Brief Summary of the Measures*

2

3            The Cardiac Rehabilitation Performance Measure Set A is based on two criteria for the

4

appropriate referral of patients to a CR program:

5

6

1. All hospitalized patients with a qualifying CVD event are referred to an outpatient CR

7

program prior to hospital discharge; and

8

9

2. All outpatients with a qualifying diagnosis who have not already participated in a CR

10

program within the year following the qualifying CVD event are referred to an outpatient

11

CR program by their healthcare provider within that year.

12

13

It should be noted that the healthcare system and its providers who care for patients

14

during and/or after CVD events are accountable for these performance measures. Physicians or

15

other healthcare providers who see patients with CVD but who do not have a primary role in

16

managing their CVD are not accountable for meeting these criteria. For example, an

17

ophthalmologist who is performing an annual retinal exam on a diabetic patient in the year after

18

their MI would not be responsible for referring the patient to a CR program. Additional details

19

regarding this performance measure set are included in Appendix B.

20

21

*C. Data Collection Instruments*

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23            Examples of tools that may be of help in applying the Cardiac Rehabilitation

24

Performance Measure Set A into practice are included in Figures 1 and 2. In Figure 1, an

25

example is shown of a standardized CR referral tool that healthcare systems could potentially use

26

in the inpatient setting, while Figure 2 shows an example of a potential CR referral tool for

27

outpatient practice settings. Figure 3 shows an example of a performance measure tracking tool

28

that can be used by health care systems following MI, with the performance measure of CR

29

referral included in the performance measurement tool.

30

It should be noted that these tools are given as examples and not as endorsed instruments.

31

Healthcare systems and providers are encouraged to develop and implement systematic tools that

32

are most appropriate and most effective for their particular setting and patient population groups.



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

3

4    ***Structural measures***

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

8

9    ***Process measures***

- 10           • Assessment and documentation of each patient’s risk for adverse events during exercise
- 11           • A process to assess patients for inter-current changes in symptoms
- 12           • Individualized assessment and evaluation of modifiable CVD risk factors
- 13           • Development of individualized risk reduction interventions for identified conditions  
14           and coordination of care with other health care providers
- 15           • Evidence of a plan to monitor response and document program effectiveness through  
16           ongoing analysis of aggregate data. This includes:
  - 17           ○ A plan to assess completion of the prescribed course of CR
  - 18           ○ A standardized plan to reassess patient outcomes at the completion of CR
- 19           • Methodology to document program effectiveness and initiate quality improvement  
20           strategies

21

22 Appendix C provides the detailed specifications for each outpatient performance measure.

23

24    ***C. Data Collection Instruments***

25

26           The Cardiac Rehabilitation Performance Measurement Set B is intended to be used  
27 prospectively to review a program’s internal procedures with the ultimate goal of enhancing the  
28 quality improvement process. To aid in data compilation, a data collection tool or flow sheet is  
29 recommended. An example of such a collection tool is shown in Table 2. Healthcare systems  
30 and practices are encouraged to develop and/or use a tool that conforms to local practice patterns  
31 and standards.

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## V. Discussion

The aim of the Cardiac Rehabilitation Performance Measures Writing Committee was to address an important, persistent gap 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-related, provider-related, and healthcare system-related barriers. The Writing Committee designed performance measure sets that hold healthcare providers, cardiac rehabilitation program staff members, and leaders of healthcare 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 measure 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 (post-MI, post-CABG, post-PCI, for example). The second performance measure set is designed to clarify structure-based 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 who may benefit from CR services, but simply 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 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 Performance Measure Sets.

To be effective, the recommendations in the Writing Committee will need to be adapted, adopted and implemented by healthcare systems, healthcare providers, health insurance carriers, chronic disease management organizations, and other groups in the healthcare field that have

- 1 responsibility for the delivery of care to persons with CVD. Such strategies should be part of an
- 2 overall systems-based approach to minimize inappropriate gaps and variation in patient care,
- 3 optimize delivery of health-promoting services, and improve patient-centered health outcomes.

1 VI. Figures

- 1 **Figure 1:** Sample cardiac rehabilitation outpatient referral tool for hospitalized patients, for the
- 2 Cardiac Rehabilitation Performance Measurement Set A.

1 **Inpatient Provider Referral to Outpatient Cardiac Rehabilitation** [Page 1 of 2]  
 2 Order applies to patients (18 years of age and older) with cardiovascular disease  
 3  
 4

**ALERT**

This order set does not apply to long-term nursing home placement for more than 60 days, homebound patients, or patients with severe dementia.

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**Primary Diagnosis during this Admission: (Select All That Apply)**

- Angina  Heart Transplant
- Percutaneous Coronary Intervention (PCI)  Valve Surgery
- Myocardial Infarction (MI)  Heart Failure
- Coronary Artery Bypass Graft (CABG)  Other: \_\_\_\_\_
- Coronary Artery Disease (CVD)

**Hospital Service Requesting Referral:**

<input type="checkbox"/> <b>CCU Service</b> <input type="checkbox"/> <b>Inpatient Cardiology Services</b> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D  <input type="checkbox"/> <b>Other:</b> _____	<input type="checkbox"/> <b>Cardiovascular Surgery Services</b> <input type="checkbox"/> Smith <input type="checkbox"/> Johnson
---	--

**Intervention:**  Order outpatient cardiac rehabilitation referral (Phase II).

Prescriber's Signature: _____	Prescriber's Pager#: _____	Service Pager#: _____
Prescriber's Printed Name: _____	Date: _____	Time: _____
This order set has been developed to reflect the practice patterns of the clinicians who wrote it. It sets forth recommendations, not rigid rules.		

**Referral Process: (Cardiovascular Hospital Service Registered Nurse to complete.)**

1. Impressing the importance of outpatient cardiac rehabilitation by initiating an electronic consultation for the inpatient cardiac rehabilitation team to arrange an inpatient contact prior to dismissal. Note: If patient has an inpatient contact, #2 and #3 will be discussed with them.
2. Discussing with patient the choices of cardiac rehabilitation programs in their home area and have patient select a program
3. Providing patient with information about the selected cardiac rehabilitation program
4. Calling the receiving cardiac rehabilitation program, chosen by patient, requesting that the program contact the patient at home to arrange the first appointment.
5. Documenting the name of the cardiac rehabilitation program in the hospital discharge summary with copies of the appropriate enclosures. (Refer to the instructions section on back of order set.)

Script for Description of Cardiac Rehabilitation Program:

Cardiac Rehabilitation is an important part of the recovery process for patients like you. The program is administered by healthcare professionals that will assist you with risk factor modification, monitored and supervised exercise, and assists in the recovery process with ongoing education and support. **One of the most important reasons to attend outpatient cardiac rehabilitation is to let you and your physician know what you can do safely.** Research studies suggest numerous benefits of cardiac rehabilitation, including among other things an increase in life expectancy and an improved overall quality of life for those who participate in such a program compared to those who don't. There may be differences in insurance coverage. If you have questions regarding insurance coverage, please discuss with your program representative on the first visit.

**Instructions:**

In addition to completing one of the sections in the Hospital Dismissal Summary titled "Ongoing Therapy", "Ongoing Care", or "Follow-up Arrangement", with the cardiac rehabilitation program the patient will attend; a letter must be sent to the designated cardiac rehabilitation program including the following enclosures as available:

- Hospital Dismissal Summary
- Latest 12 lead ECG
- Echocardiogram
- Angiogram Report

Enclosures to consider in addition are dependent on patient diagnosis, tests/procedures done, and condition.

These may include:

- Surgical Report
- Inpatient cardiac rehabilitation team notes
- Occupational Therapy Evaluation (which may include a work evaluation, activity modification guidelines, or a safety evaluation).

- 1 **Figure 2:** Sample cardiac rehabilitation outpatient referral tool for hospitalized patients, for the
- 2 Cardiac Rehabilitation Performance Measurement Set A.

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**Cardiac Health, Rehabilitation & Secondary Prevention  
OUTPATIENT PHYSICIAN REFERRAL**

Participant Name: \_\_\_\_\_ DOB: \_\_\_\_\_

**1. Please check appropriate diagnoses.** One must be primary for billing purposes.

<i>Primary</i>	<i>Secondary</i>
p MI	p Heart failure
p CABG	p PTCA/related procedure
p Stable angina	p Cardiomyopathy
	p Valve disease/surgery/replacement
	p Other

**2. A physician supervised GXT is requested for entry into the program.** Please check one.

- p Yes, Please schedule
- p Yes, It's been completed and results available at my office
- p No, I am deferring the GXT

**3. Please list on the back of this form all medications** (including dosage and frequency) on which you have this patient managed.

p Inpatient referral ~ please refer to the discharge summary

**4. Please select the appropriate risk stratification**

p <i>LOW</i>	p <i>INTERMEDIATE</i>	p <i>HIGH</i>
No sig LVD (EF ≥ 50%)	Mild – mod LVD (EF 31-49%)	Severe LVD (EF ≤30%)
No ischemia, angina, ST <input type="checkbox"/>	Func cap < 5-6 METs p 3 wks	Complex arrhyth @ rest, w/ ex
No complex arrhyth, rest nor ex	Failure to comply with intensity rx	<input type="checkbox"/> SBP 15mmHg or fail to w/ ex
Uncomplicated MI, CABG, proc	Ischemia (1-2mm $\square$ ), revers. def.	Survivor of sudden cardiac death
Functional cap ≥ 6 METs p 3 wks		Compl MI w/ CHF, shock, arrhyth
		Severe CVD, ischemia (>2mm $\square$ )

**Please define any special precautions or limitations.**

- p Exercise prescription per protocol      or      p Refer to written instructions
- p Education per protocol                      or      p Refer to written instructions
- p Counselin, behavior change,              or      p Refer to written instructions
- psychosocial intervention per

1 protocol

2

3

4 \_\_\_\_\_  
MD Signature and date

1 **Figure 3:** Sample Data Collection Tool for referral of hospitalized patients to an outpatient  
2 cardiac rehabilitation program, for the Cardiac Rehabilitation Performance Measurement Set A  
3 (adapted from American Heart Association's *Get With The Guidelines*) (38).

4

Insert Patient Information here

Insert hospital Identification/logo here

1  
2 Multidisciplinary Cardiac Discharge Checklist/Instructions  
3 To be completed by physician, nurse, or other care provider at patient's discharge  
4  
5 Admission Date: \_\_\_\_\_ Discharge Date: \_\_\_\_\_  
6

7 Diagnosis: \_\_\_\_\_  
8

9 Check each therapy prescribed or check contraindication reason

- 10  Aspirin; Next dose due (date/time) \_\_\_\_\_ / \_\_\_\_\_
- 11  No aspirin, reason documented in discharge summary.
- 12  Clopidogrel; Next dose due (date/time) \_\_\_\_\_ / \_\_\_\_\_
- 13  No Clopidogrel, reason documented in discharge summary
- 14  Beta Blocker; Next dose due (date/time) \_\_\_\_\_ / \_\_\_\_\_
- 15  No Beta Blocker, reason in discharge summary
- 16  ACE Inhibitor; Next dose due (date/time) \_\_\_\_\_ / \_\_\_\_\_
- 17  No ACE inhibitor, reason documented in discharge summary
- 18  Statin or other lipid-lowering agent; Next dose due (date/time) \_\_\_\_\_ / \_\_\_\_\_
- 19  No statin or other LLA, reason documented in discharge summary
- 20  **Cardiac rehabilitation referral made, patient information communicated to program**
- 21  No exercise prescription and/or cardiac rehab referral with reason in discharge summary.
- 22  Smoking Cessation Teaching & pharmacological therapy given (Patient is a current smoker or former smoker of less than one year) or
- 23  Smoking Cessation Teaching & pharmacological therapy not required (Patient is nonsmoker or former smoker of greater than one year)
- 24  Education on warning signs of MI and what to do if symptoms given
- 25  Education not given, reason documented in discharge summary
- 26  Diet: Low-fat, low-cholesterol, no added salt \_\_\_\_\_
- 27  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 physician's office for test results in \_\_\_\_\_ days

30  
31 If condition worsens, new symptoms develop or questions arise, call your physician.  
32

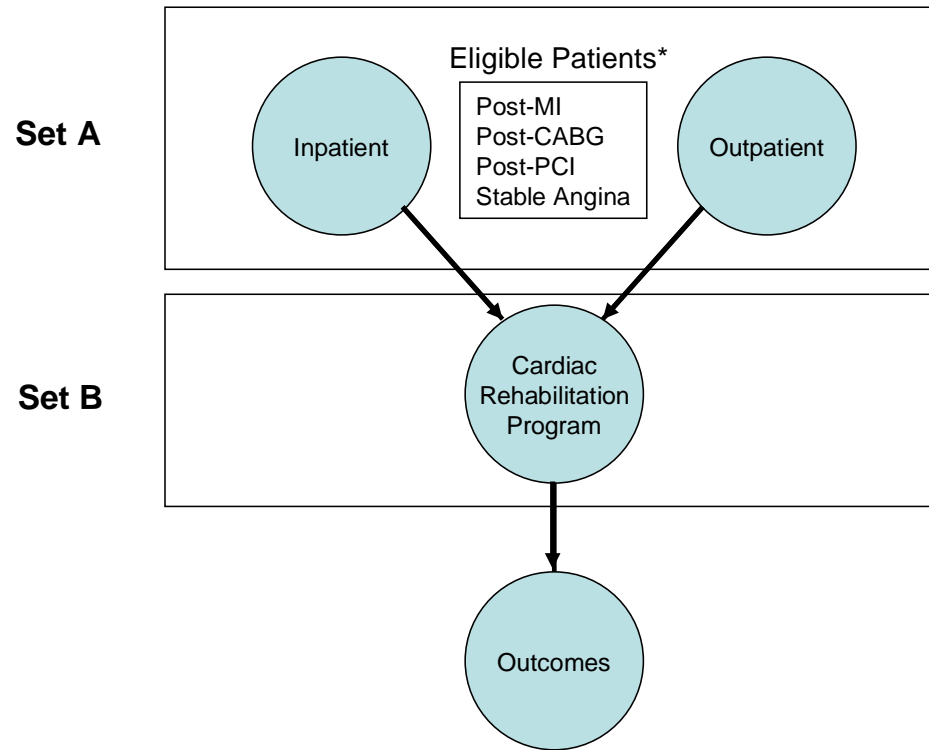
33 I hereby acknowledge receiving the explanation of the above instructions:  
34

35 Patient's signature: \_\_\_\_\_ other  
36 (relationship): \_\_\_\_\_ Date: \_\_\_\_\_

37  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:** Diagram showing the relationship between the Cardiac Rehabilitation Performance Measure Sets A and B, and the patient sub-groups for which the Performance Measure Sets apply.



\*Other eligible patients not included in these performance measure sets include patients who have undergone heart valve, heart transplant or heart/lung transplant surgery.

## VII. Tables

**Table 1:** The ACC/AHA classifications for classification of recommendations and level of evidence for guidelines and clinical recommendations (23).

The ACC/AHA classifications I, II, and III are used to summarize indications as follows:

*Class I:* Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective.

*Class II:* Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment.

*Ia:* Weight of evidence/opinion is in favor of usefulness/efficacy.

*Ib:* Usefulness/efficacy is less well established by evidence/opinion.

*Class III:* Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful.

The weight of the evidence is rated the highest (Level A) if the evidence is derived multiple randomized clinical trials involving large numbers of patients. The weight of evidence is considered intermediate (B) if the evidence is derived from a limited number of randomized trials involving small numbers of patients or from carefully designed nonrandomized studies or observational registries. A lower rating (C) is given when expert consensus is the primary basis for the recommendation.

**Table 2:**

Sample Data Collection Tools for the Cardiac Rehabilitation Performance Measurement Set B

American Association of Cardiovascular and Pulmonary Rehabilitation, American College of Cardiology, and American Heart Association Cardiac Rehabilitation Program Performance Measure Set Prospective Data Collection Flow Sheet					
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: <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 & communication to health care provider of patient's status	Reassessment prior to completion of program	Changes in intervention plan & communication to health care provider
Date					
<b>Tobacco Use</b>	Complete Cessation. No exposure to environmental tobacco smoke.	<input type="checkbox"/> Never <sup>1</sup> <input type="checkbox"/> Former <sup>2</sup> <input type="checkbox"/> Recent <sup>3</sup> <input type="checkbox"/> Current <sup>4</sup> 1. never used tobacco products 2. has used tobacco products in past and quit more than 12 months prior to assessment 3. has used tobacco	<i>Complete only if current or recent tobacco use</i> <input type="checkbox"/> Individual education and counseling <u>or</u> <input type="checkbox"/> Referral to a tobacco cessation program <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Never <input type="checkbox"/> Former <input type="checkbox"/> Recent <input type="checkbox"/> Current	<i>Complete only if current or recent tobacco use</i> <input type="checkbox"/> Individual education and counseling <u>or</u> <input type="checkbox"/> Referral to a tobacco cessation program <u>and</u> <input type="checkbox"/> Health care provider notified

		products in the past, but quit less than 12 months prior to assessment 4. currently using tobacco products			
<b>Blood Pressure Control</b>	<140/90 mmHg or <130/80 mmHg if patient has diabetes or chronic kidney disease	<input type="checkbox"/> Optimal control <input type="checkbox"/> Suboptimal control	<i>Complete only if suboptimal control</i> Education completed: <input type="checkbox"/> Target BP goal <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Optimal control <input type="checkbox"/> Suboptimal control	<i>Complete only if suboptimal control</i> Education completed: <input type="checkbox"/> Target BP goal <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification <u>and</u> <input type="checkbox"/> Health care provider notified

	<b>Target Goal</b>	<b>Initial Assessment</b>	<b>Intervention plan &amp; communication to health care provider of patient's status</b>	<b>Reassessment prior to completion of program</b>	<b>Changes in intervention plan &amp; communication to health care provider</b>
<b>Lipid Control</b>	For CVD and CVD equivalents:  LDL-C <100mg/dL If triglycerides are >200mg/dL, <u>non-HDL-C should be &lt;130mg/dL</u>	<input type="checkbox"/> Optimal control <input type="checkbox"/> Suboptimal control	<i>Complete only if CVD and suboptimal control</i> Education completed: <input type="checkbox"/> Target lipid goals <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Optimal control <input type="checkbox"/> Suboptimal control	<i>Complete only if suboptimal control</i> Education completed: <input type="checkbox"/> Target lipid goals <input type="checkbox"/> Medication compliance <input type="checkbox"/> Lifestyle modification <u>and</u> <input type="checkbox"/> Health care provider notified
<b>Physical Activity Habits</b>	30 minutes, minimum 5 days per week	<input type="checkbox"/> Optimal habits <input type="checkbox"/> Suboptimal habits	<i>Complete only if habits are suboptimal</i> <input type="checkbox"/> Recommendations given to patient <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> Optimal habits <input type="checkbox"/> Suboptimal habits	<i>Complete only if habits are suboptimal</i> <input type="checkbox"/> Recommendations given to patient <u>and</u> <input type="checkbox"/> Health care provider notified
<b>Weight Management</b>	Body mass index: 18.5-24.9kg/m <sup>2</sup> <u>or</u> Waist circumference: men<40 inches Women<35 inches	<input type="checkbox"/> At target <input type="checkbox"/> Above target	<i>Complete only if above target</i> <input type="checkbox"/> Education completed concerning target goals, diet, behavior change, regular physical activity <u>or</u> <input type="checkbox"/> Referral to a weight management program <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> At target <input type="checkbox"/> Above target	<i>Complete only if above target</i> <input type="checkbox"/> Education completed concerning target goals, diet, behavior change, regular physical activity <u>or</u> <input type="checkbox"/> Referral to a weight management program <u>and</u> <input type="checkbox"/> Health care provider notified

	Target Goal	Initial Assessment	Intervention plan & communication to health care provider of patient's status	Reassessment prior to completion of program	Changes in intervention plan & communication to health care provider
<b>Presence or Absence of Diabetes Mellitus (DM) or Impaired Fasting Glucose (IFG)</b>	HbA <sub>1C</sub> <7%	<input type="checkbox"/> DM or IFG present <input type="checkbox"/> DM or IFG absent	<p><i>Complete only if diabetes mellitus or impaired fasting glucose is present</i></p> <input type="checkbox"/> Documentation that patient has attended skill training & medical nutrition therapy session <u>or</u> <input type="checkbox"/> Referral to skill training & medical nutrition therapy session <u>or</u> <input type="checkbox"/> Intervention plan recommended which includes: target goals for HgA <sub>1C</sub> , medical nutrition counseling, & skill training <u>and</u> <input type="checkbox"/> Health care provider notified	<input type="checkbox"/> DM or IFG present <input type="checkbox"/> DM or IFG absent	<p><i>Complete only if diabetes mellitus or impaired fasting glucose is present</i></p> <input type="checkbox"/> Documentation that patient has attended skill training & medical nutrition therapy session <u>or</u> <input type="checkbox"/> Referral to skill training & medical nutrition therapy session <u>or</u> <input type="checkbox"/> Intervention plan recommended which includes: target goals for HgA <sub>1C</sub> , medical nutrition counseling, & skill training <u>and</u> <input type="checkbox"/> Health care provider notified

<p><b>Presence or Absence of Depression</b></p>	<p>Assessment of presence or absence of depression using a valid and reliable screening tool</p>	<p><input type="checkbox"/> Patient screened for depression  <input type="checkbox"/> Patient not screened for depression</p>	<p><i>Complete only if screening tool indicates possible depression:</i>  <input type="checkbox"/> Results discussed with patient <u>and</u>  <input type="checkbox"/> Health care provider notified</p>	<p><input type="checkbox"/> Patient re-screened for depression  <input type="checkbox"/> Patient not re-screened for depression</p>	<p><i>Complete only if screening tool indicates possible depression:</i>  <input type="checkbox"/> Results discussed with patient <u>and</u>  <input type="checkbox"/> Health care provider notified</p>
<p><b>Exercise Capacity</b></p>	<p>Assessment of symptom limited exercise tolerance &amp; development of an individualized exercise prescription</p>	<p><input type="checkbox"/> Assessment and exercise prescription completed  <input type="checkbox"/> Assessment and exercise prescription not completed</p>	<p><input type="checkbox"/> Exercise prescription communicated to the patient and health care provider</p>	<p><input type="checkbox"/> Re-assessment and exercise prescription completed  <input type="checkbox"/> Re-assessment and exercise prescription not completed</p>	<p><input type="checkbox"/> Revised exercise prescription communicated to the patient and health care provider</p>

	<b>Target Goal</b>	<b>Initial Assessment</b>	<b>Intervention plan &amp; communication to health care provider of patient's status</b>	<b>Reassessment prior to completion of program</b>	<b>Changes in intervention plan &amp; communication to health care provider</b>
<b>Nutrition Habits</b>	Nutrition habits as defined by the most recent AHA Diet and Lifestyle Recommendations Scientific Statement	<input type="checkbox"/> Assessment of nutrition habits using a valid and reliable tool performed <input type="checkbox"/> Assessment of nutrition habits using a valid and reliable tool not performed	<i>Complete only if suboptimal nutrition habits:</i> <input type="checkbox"/> Education and counseling regarding dietary goals and how to attain them <u>or</u> <input type="checkbox"/> Referral for individual nutritional counseling	<input type="checkbox"/> Reassessment of nutrition habits using a valid and reliable tool performed <input type="checkbox"/> Reassessment of nutrition habits using a valid and reliable tool not performed	<i>Complete only if suboptimal nutrition habits:</i> <input type="checkbox"/> Education and counseling regarding dietary goals and how to attain them <u>or</u> <input type="checkbox"/> Referral for individual nutritional counseling
<b>Use of Preventive Medications</b>	Compliance with preventive medications	<input type="checkbox"/> Patient has a diagnosis of CVD <input type="checkbox"/> Patient does not have diagnosis of CVD	<i>Complete only if patient has a diagnosis of CVD:</i> <input type="checkbox"/> Individual education and counseling about the importance of adherence to appropriate preventive medications <u>or</u> <input type="checkbox"/> Group education and counseling about the importance of adherence to appropriate preventive medications		

*\*Target goals are from the 2006 AHA/ACC Secondary Prevention Guidelines  
Assessment Terms and Definitions are from the Outcomes Registry Proposal*

## VIII. Appendices

**Appendix A: Committee Relationship with Industry**

**Relationships with Industry –AACVPR/ACC/AHA Cardiac Rehabilitation Performance Measures**

<b>Work Group Member</b>	<b>Research Grant</b>	<b>Speakers Bureau/Honoraria/ Expert Witness</b>	<b>Stock Ownership</b>	<b>Consultant/ Advisory Board/Steering Committee</b>
Randal J. Thomas, MD, MS, FAHA, FACP	None	None	None	None
Marjorie King, MD, FACC, FAACVPR	None	None	None	Healthways
Karen Lui, RN, C, 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		Health Outcomes Services, Outcomes Instruments	Amgen, United Healthcare

## Appendix B:

### Cardiac Rehabilitation Performance Measurement Set A:

#### Performance Measure A-1

<p><b>1. Cardiac Rehabilitation Patient Referral: Inpatient setting</b></p> <p>All patients who have experienced an acute myocardial infarction (MI), undergone coronary artery bypass graft (CABG) surgery or a percutaneous coronary intervention (PCI) are to be referred to an outpatient cardiac rehabilitation program.</p>	
<p><b>Numerator</b></p>	<p>Number of eligible patients (post-MI, post-CABG, and/or post-PCI) who have been referred to an outpatient cardiac rehabilitation program prior to hospital discharge or have a documented medical or patient-centered reason why such a referral was not made. (The program may include a traditional cardiac rehabilitation program based on face-to-face interactions and training sessions, or may include non-traditional home-based approaches.)</p> <p>A referral is defined as an official communication between the healthcare provider and the patient to recommend and carry out a referral order to an outpatient cardiac rehabilitation program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an outpatient cardiac rehabilitation program. This also includes a communication between the healthcare provider or healthcare system and the cardiac rehabilitation program that includes the patient’s referral information for the program. All communications must maintain appropriate confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act (HIPPA).</p> <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> <li>• Patient-oriented barriers (patient refusal, for example)</li> <li>• Provider-oriented criteria (patient deemed to have a high risk condition or a contraindication to exercise, for example)</li> </ul>
<p><b>Denominator</b></p>	<p>Number of hospitalized patients in the reporting period hospitalized with a qualifying diagnosis (MI, CABG, and/or PCI) who do not meet any of the exclusion criteria mentioned above.</p>
<p><b>Period of Assessment</b></p>	<p>Inpatient hospitalization</p>

<b>Method of Reporting</b>	Proportion of healthcare system’s hospitalized MI, CABG, and PCI patients who had documentation of their referral to an outpatient cardiac rehabilitation program.
<b>Sources of Data</b>	Administrative data and/or medical records.

**Rationale:**

While cardiac rehabilitation services have been shown to help reduce morbidity and mortality in persons who have experienced a recent coronary artery disease event, these services are vastly underutilized. A key component to cardiac rehabilitation utilization is the appropriate and timely referral of patients to an outpatient cardiac rehabilitation program. Generally, the most important time for this referral to take place is while the patient is hospitalized for a qualifying event (e.g., myocardial infarction, percutaneous coronary intervention, coronary artery bypass graft surgery).

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

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

Effective referral of appropriate patients to an outpatient cardiac rehabilitation program is the responsibility of the healthcare team within a healthcare system that is providing care to the patient either during the index hospitalization or in the post-hospitalization period.

**Corresponding Guidelines and Clinical Recommendations:**

*ACC/AHA 2004 Guideline Update for Coronary Artery Bypass Graft Surgery (20)*

Class I (for the description of the class of recommendations and level of evidence used in this document, see Table 2)

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 (21)*

Class I

Cardiac rehabilitation/secondary prevention programs, when available, are recommended for patients with STEMI, 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 Guidelines Update for the Management of Patients with Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction (22)*

Class I

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

*ACC/AHA 2002 Guideline Update for the Management of Patients with Chronic Stable Angina (23)*

Class I

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

*ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult: Executive Summary (25)*

Class I

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

*Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women (26)*

Class I

Women with a recent acute coronary syndrome or coronary intervention, new onset or chronic angina should participate in a comprehensive risk-reduction regimen, such as cardiac rehabilitation or a physician-guided home- or community-based program. (Level of Evidence: B)

**Challenges to Implementation:**

Communication of referral information by the inpatient hospital service team to the outpatient cardiac rehabilitation 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 cardiac rehabilitation team member or a hospital discharge planning team member.

**Cardiac Rehabilitation Performance Measurement Set A:**

**Performance Measure A-2**

<p><b>2. Cardiac Rehabilitation Patient Referral: Outpatient setting</b></p> <p>All patients who within the past 12 months have experienced an acute myocardial infarction (MI), undergone coronary artery bypass graft (CABG) surgery or a percutaneous coronary intervention (PCI), or who have chronic stable angina (CSA) and have not already participated in an outpatient cardiac rehabilitation program during the past 12 months, are to be referred to an outpatient cardiac rehabilitation program.</p>	
<b>Numerator</b>	<p>Number of patients in an outpatient clinical practice who have had a qualifying event (MI, CABG, PCI) during the previous 12 months, who have been referred to an outpatient cardiac rehabilitation program. (The program may include a traditional cardiac rehabilitation program based on face-to-face interactions and training sessions, or may include non-traditional home-based approaches.)</p> <p>A referral is defined as an official communication between the healthcare provider and the patient to recommend and carry out a referral order to an outpatient cardiac rehabilitation program. This includes the provision of all necessary information to the patient that will allow the patient to enroll in an outpatient cardiac rehabilitation program. This also includes a communication between the healthcare provider or healthcare system and the cardiac rehabilitation program that includes the patient’s referral information for the program. All communications must maintain an appropriate level of confidentiality as outlined by the 1996 Health Insurance Portability and Accountability Act (HIPPA).</p> <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> <li>• Patient-oriented barriers (patient refusal, for example)</li> <li>• Provider-oriented criteria (patient deemed to have a high risk condition or a contraindication to exercise, for example)</li> </ul>
<b>Denominator</b>	<p>Number of patients in an outpatient clinical practice who have had a qualifying event (MI, CABG, PCI) during the previous 12 months, and who do not meet any of the exclusion criteria mentioned in the numerator section above.</p>
<b>Period of Assessment</b>	<p>One year (12 months) following hospital discharge for a</p>

	qualifying event (MI, CABG, PCI)
<b>Method of Reporting</b>	Proportion of patients in an outpatient practice who have had a qualifying event during the past 12 months and have been referred to a cardiac rehabilitation program since the qualifying event.
<b>Sources of Data</b>	Administrative data and 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. A key component to cardiac rehabilitation utilization is the appropriate and timely referral of patients to an outpatient cardiac rehabilitation program. While referral takes place generally while the patient is hospitalized for a qualifying event (e.g., myocardial infarction, percutaneous coronary intervention, coronary artery bypass graft surgery), 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 healthcare systems implement effective steps in their systems of care that will optimize the appropriate referral of a patient to an outpatient cardiac rehabilitation program.

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

Referral of appropriate patients to a cardiac rehabilitation program is the responsibility of the healthcare team within a healthcare system that is providing care to the patient either during the index hospitalization or in the post-hospitalization period.

**Corresponding Guidelines and Clinical Recommendations:**

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

**Challenges to Implementation:**

Communication of referral information by the outpatient clinical practice team to the outpatient cardiac rehabilitation program represents a potential challenge to the implementation of this Performance Measure.

## Appendix C:

### Cardiac Rehabilitation Performance Measurement Set B:

#### Performance Measure B-1

##### 1. Structure-based Measurement Set

The program meets at least one of the following two measures:

1. Policies are in place to demonstrate that:
  - A. A physician-director is responsible for the oversight of program policies and procedures and which assures that policies and procedures are consistent with evidence-based guidelines, safety standards, and regulatory standards (39).
  - B. An emergency response team is immediately available to respond to medical emergencies (40).
    1. In a hospital setting, physician supervision is presumed to be met when services are performed on hospital premises (41).
    2. In the setting of a free-standing outpatient cardiac rehabilitation program (owned/operated by hospital, but not located on main campus), a physician-directed emergency response team must be present and immediately available to respond to emergencies.
    3. 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.
  - C. All professional staff have successfully completed the national Cognitive and Skills examination in accordance with the AHA curriculum for BLS with at least one staff member present who has completed the National Cognitive and Skills examination in accordance with the AHA curriculum for ACLS and has met state and hospital or facility medico-legal requirements for defibrillation and other related practices (39, 42, 43).
  - D. Functional emergency resuscitation equipment and supplies for handling cardiovascular emergencies are immediately available in the exercise area (40).
2. Program has current AACVPR Program Certification.

<b>Numerator</b>	The number of cardiac rehabilitation programs in the health care system which meet these structure-based performance measure criteria
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<b>Denominator</b>	All cardiac rehabilitation programs within a healthcare system
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	Inclusive data collection tracking sheet
<b>Sources of Data</b>	Evidence of policies in place or current AACVPR Program Certification

**Rationale:**

The delivery of cardiac rehabilitation services is physician-directed and provided by a multi-disciplinary staff of healthcare 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 cardiac rehabilitation is consistent with the most current clinical practice guidelines.

There is a growing trend among patients referred to and completing early outpatient cardiac rehabilitation to be older, at higher risk, and have more chronic comorbidities (44). Medical supervision is the most important day-to-day safety factor in cardiac rehabilitation (39). Personnel and equipment for advance cardiac life support are essential to the adequate delivery of emergency care for patients who experience cardiac arrest or other life-threatening events during cardiac rehabilitation sessions.

Although rare, cardiovascular emergencies can occur during exercise training in cardiac rehabilitation programs. Studies suggest that the incidence of cardiac arrest requiring defibrillation is approximately 1 arrest every 100,000 patient hours (45). Practice guidelines for management of cardiac arrest include the use of basic and advanced life support strategies, such as early defibrillation (37, 39). Such strategies have been shown to help improve outcomes in persons who experience cardiac arrest (46).

Current AACVPR Cardiac Rehabilitation Program Certification requires that all of the above policies (1A-D) are in place and operational.

**Corresponding Guidelines and Clinical Recommendations:**

*Medical Director Responsibilities for Outpatient Cardiac Rehabilitation/secondary Prevention Programs (39)*

(No class of recommendation or level of evidence given)

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

*AACVPR Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs (47)*

(No class of recommendation or level of evidence given)

All professional staff has completed basic life support training; at least one staff member is present who has successfully completed training in advanced cardiac life support (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 medicolegal 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 (37)*

(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 (41)*

(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.

**Cardiac Rehabilitation Performance Measurement Set B:**

**Performance Measure B-2**

<p><b>2. Assessment of Risk for Adverse Events</b></p> <p>The program has a policy in place that is applied to each patient upon enrollment into the cardiac rehabilitation program and that includes <u>all</u> of the following processes:</p> <ul style="list-style-type: none"> <li>(1) Assessment of the patient’s risk for adverse events during exercise, made at program entry.</li> <li>(2) Process to assess, during the time a patient is enrolled in the cardiac rehabilitation program, any inter-current changes in symptoms that would increase risk of adverse events during exercise</li> <li>(3) Based on patient assessments, there is a tailored adjustment of the patient’s rehabilitation program, and referral for further evaluation and treatment when appropriate.</li> </ul>	
<b>Numerator</b>	Number of programs in the health system that meet these quality indicator criteria
<b>Denominator</b>	Number of programs in the health care system
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	Inclusive data collection tracking sheet
<b>Sources of Data</b>	Evidence of policy in place or current AACVPR Program Certification

**Rationale:**

Adverse events are rare during the recuperation period following an acute coronary artery disease (CVD) event (MI, PCI, CABG surgery), occurring approximately once in every 100,000 patient hours (45). Still, their occurrence is significant, treatable, and potentially avoidable. The identification of patients at high risk for adverse events during exercise can help cardiac rehabilitation programs maximize the safety of the rehabilitation program for their patients.

Methods have been suggested for risk stratification following an acute CVD event, including methods that include the following criteria that are thought to identify persons at short-term high risk for adverse events: (1) left ventricular dysfunction, (2) inducible myocardial ischemia, (3) high grade left ventricular arrhythmias, and (4) onset or acceleration of cardiovascular symptoms (21, 47, 48).

Published reports suggest limited accuracy of the risk stratification methods from AACVPR, ACC/AHA, and ACP in identifying patients at risk for adverse events during cardiac rehabilitation sessions (49). However, one study found that a combination of the AACVPR criteria with a co-

morbidity index helped improve the accuracy of risk stratification, particularly among female patients (50).

A standardized screening evaluation should be performed prior to clearing a patient with CVD to exercise (37). Such screening is aimed at identifying patients with unstable symptoms and other factors that place the patient at increased risk for adverse events during exercise, including diabetes, which can increase the likelihood of silent ischemia in affected patients.

When high risk findings are noted, a patient's rehabilitation recommendations should be adjusted accordingly, and further evaluation and/or treatment may be warranted.

**Corresponding Guidelines and Clinical Recommendations:**

*AACVPR Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs (47)*

(No class of recommendation or level of evidence given)

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

*Exercise standards for testing and training: a statement for healthcare professionals from the American Heart Association (37)*

(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.

**Cardiac Rehabilitation Performance Measurement Set B:**

**Performance Measure B-3**

**3. Individualized Assessment and Evaluation of Modifiable Cardiovascular Risk Factors, Development of Individualized Interventions, and Communication with Other Health Care Providers**

Patients in early outpatient cardiac rehabilitation for whom there has been individualized assessment and evaluation of modifiable cardiovascular disease risk factors, development of individualized interventions, and communication with other health care providers concerning these risk factors and interventions.

**Performance Measure 3a – Individualized assessment of tobacco use**

For each eligible patient enrolled in the cardiac rehabilitation 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 and counseling and/or referral to a tobacco cessation program.
3. Prior to completion of the cardiac rehabilitation program, the patient’s status regarding tobacco use is reassessed. If present, continued use and the intervention plan are communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u>                      Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors                      Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u>                      Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

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 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.

Cessation of tobacco use is most successful when healthcare 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% (51).

### **Corresponding Guidelines and Clinical Recommendations**

*AHA/ACC Guidelines for Secondary Prevention for Patients with Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)*

Class I

Goal: Complete cessation. No exposure to environmental tobacco smoke. (Level of Evidence B)

*AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs 2006 Update (53)*

(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 data. No exposure to environmental tobacco smoke at work and home.

*AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (54)*

(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 (55)*

Percentage of patients queried one 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 3b – Individualized assessment of blood pressure control**

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

1. An assessment is made of blood pressure control, with target goals defined by the AHA/ACC secondary prevention guidelines.
2. If blood pressure control is suboptimal, an intervention plan is recommended to the patient and communicated to the primary care provider and/or cardiologist. This should include education about target blood pressure goals, medication compliance, lifestyle modification for optimal dietary and physical activity habits, and weight control.
3. Prior to completion of the cardiac rehabilitation program, blood pressure control is reassessed and suboptimal control is communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Blood pressure levels represent a strong, consistent, continuous, independent, and etiologically relevant risk factor for cardiovascular and renal disease. Optimal control of

blood pressure has a beneficial impact on lowering cardiovascular risk (54).

See also the rationale section from Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*AHA/ACC Guidelines for Secondary Prevention for Patients with Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)*

Class I

Goal: <140/90 mmHg or <130/80 mmHg 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 2006 Update (53)*

(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 (54)*

(No class of Recommendation or Level of Evidence given)

Goal: Aim for a normal blood pressure

*Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. National High Blood Pressure Education Program (56)*

(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 (55)*

Percentage of patients who had a blood pressure measurement during the last office visit

**Performance Measure 3c – Individualized assessment of optimal lipid control**

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

1. An assessment of blood lipid control and use of lipid lowering medications,

<p>with target goals defined by the AHA/ACC secondary prevention guidelines.</p> <p>2. If lipid target goals are not met then 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.</p> <p>3. Prior to completion of the cardiac rehabilitation program, lipid management, including lifestyle modification, is reassessed. If lipid management is suboptimal, the primary care provider and/or cardiologist are notified.</p>	
<b>Numerator</b>	Number of patients in the healthcare system's cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system's program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Multiple clinical trials have shown the benefit of lipid-lowering agents and lifestyle modification for patients with documented cardiovascular disease.

See also rationale section from Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)*

Class I

Goal: LDL-C < 100 mg/dl; If triglycerides are > 200 mg/dl, non-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: 2006 Update (53)*

(No Class of Recommendation or Level of Evidence given)

Goals:

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

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

*AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (54)*

(No Class of Recommendation or Level of Evidence Given)

Goal: Aim for recommended levels of low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, 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 (55)*

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)

*ACC/AHA STEMI/NSTEMI Clinical Performance Measures (57)*

**Performance Measure 3d – Individualized assessment of physical activity habits**

For each eligible patient enrolled in the cardiac rehabilitation 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 and communicated to the primary care provider and/or cardiologist.
3. Prior to completion of the cardiac rehabilitation program, physical activity habits are reassessed and suboptimal habits are communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**LDL-Cholesterol Assessment:** Acute myocardial infarction patients with documentation of low-density lipoprotein cholesterol level in the hospital record or documentation that LDL-C testing was done during the hospital stay or is planned for after discharge

**Lipid-Lowering Therapy at Discharge:** Acute myocardial infarction patients with elevated low-density lipoprotein cholesterol (LDL-C $\geq$ 100 mg/dl or narrative equivalent) who are prescribed a lipid-lowering medication at hospital discharge

**Challenges to Implementation**

To avoid duplication of laboratory tests, it may be necessary to obtain results from other health care professionals.

**Rationale**

Adherence to regular physical activity has been associated with a 20-30% reduction in all-causes mortality in CVD patients (51).

See also the rationale section from Performance Measure 3a.

### **Corresponding Guidelines and Clinical Recommendations**

*AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)*

Class I

Goal: 30 minutes, 7 days per week (minimum 5 days per week) (Level of Evidence B)

*AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2006 Update (53)*

(No Class of Recommendation or Level of Evidence given)

Goal: 30-60 minutes per day 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) (58)*

(No Class of Recommendation or Level of Evidence given)

Health professionals should prescribe physical activity programs commensurate with those recommended by the CDC and the ACSM, i.e., 30 minutes or more of moderate-intensity physical activity such as brisk walking on most, and preferably all, days of the week.

### **Challenges to Implementation**

This measure relies on patient self-report.

### **Performance Measure 3e – Individualized assessment of weight management**

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

1. An assessment of body composition, including the measurement of either body mass index (BMI), waist circumference, or percent body fat, with targets as defined by the AHA/ACC secondary prevention guidelines (52).
2. If the body composition measure(s) is (are) above recommended goal(s) then an intervention plan is recommended to the patient and communicated to the primary care provider and/or cardiologist. This should include education about target goals and lifestyle modification including diet, behavior change, and regular physical activity and/or referral to a weight management program.
3. Prior to completion of the cardiac rehabilitation program, body composition is reassessed and suboptimal body composition is communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u>                      Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors                      Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u>                      Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Obesity is an independent risk factor for CVD and adversely affects CVD risk factors (54)

See also the rationale section for Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)*

Class I

Goal: Body mass index: 18.5 to 24.9 kg/m<sup>2</sup>; Waist circumference: men< 40 inches, women<35 inches (Level of Evidence B)

*AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2006 Update (53)*

(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 (54)*

(No Class of Recommendation or Level of Evidence given)

Goal: Aim for a healthy body weight

**Challenges to Implementation**

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

**Performance Measure 3f – Individualized assessment of the presence or absence of diabetes mellitus or impaired fasting glucose**

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

1. Assessment of the presence or absence of impaired fasting glucose and diabetes mellitus, with definitions as described in the most recent American Diabetes Association Standards of Medical Care in Diabetes Position Statement (59)
2. If impaired fasting glucose or diabetes is present 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). The intervention plan is communicated to the primary health care provider and/or cardiologist and/or endocrinologist.
3. Prior to completion of the cardiac rehabilitation program, the intervention plan is reassessed and communicated to the primary care provider and/or cardiologist and/or endocrinologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor <u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

The presence of diabetes mellitus (DM) or impaired fasting glucose (IFG) has been linked to unfavorable long-term cardiovascular outcomes. Because improved glycemic

control has been shown to favorably affect cardiovascular morbidity and mortality (59), the cardiac rehabilitation/secondary prevention program setting is an ideal environment to screen for DM or IFG and to initiate the behavior patterns which foster improved glycemic control (53).

See also the rationale section for Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*Physical Activity/Exercise and Type 2 Diabetes: A Consensus Statement from the American Diabetes Association (60)*

(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 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 (59)*

(No Class of Recommendation given)

Lowering A1C 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 diabetes should receive individualized medical nutrition therapy (MNT) as needed to achieve treatment goals, preferably provided by a registered dietician 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 diabetes should receive diabetes self-management education according to national standards when their diabetes 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 (52)*

Class I

Initiate lifestyle and pharmacotherapy to achieve near-normal HbA1C. (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: 2006 Update (53)*

(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 medical nutrition therapy. Consider referral to certified diabetic education for skill training, medication instruction, and support groups.

**Challenges to Implementation**

To avoid duplication of laboratory tests, it may be necessary to obtain results from other health care professionals.

**Performance Measure 3g – Individualized assessment of the presence or absence of depression**

For each eligible patient enrolled in the cardiac rehabilitation 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.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Depression is highly prevalent among patients following acute cardiac events, with 20-

45% of patients suffering significant levels of depressive symptoms after an acute myocardial infarction (61, 62). Depression has been shown to be a powerful, independent risk factor for cardiac mortality after an acute myocardial infarction or unstable angina (63, 64). Several studies suggest that depressed patients with CVD benefit from cardiac rehabilitation programs by improving coping skills and self image, reducing biological risk factors such as social isolation and smoking, by providing emotional support, and improving quality of life scores (65).

See also the rationale section from Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*Depression Screening in Cardiac Rehabilitation: AACVPR Task Force Report (66)*

(No Class of Recommendation or Level of Evidence given)

The AACVPR recommends that appropriately trained healthcare professionals in the cardiac rehabilitation 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. We 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.

**Performance Measure 3h – Individualized assessment of exercise capacity**

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

1. Assessment of exercise capacity, with standard endpoints as defined by groups such as the American College of Sports Medicine and ACC/AHA Practice Guidelines and Scientific Statements (67, 68).
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 cardiac rehabilitation program, change in exercise capacity is re-assessed. Any change in exercise tolerance or the exercise prescription is communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as

	<p>defined above) concerning all modifiable risk factors                  Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor  <u>Per Patient:</u>                  Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Several meta-analyses and systematic reviews have concluded that comprehensive, exercise-based cardiac rehabilitation reduces mortality rates in patients with CVD (3-10).

See also the rationale section from Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*ACC/AHA 2002 Guidelines Update for Exercise Testing: Summary Article (69)*

Class I

Assessment of symptom limited exercise tolerance for activity prescription.

*AHA/AACVPR Scientific Statement: Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2006 Update (53)*

(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**

To avoid duplication of effort, the results of post cardiac event stress testing done outside of the cardiac rehabilitation setting should be obtained for use in exercise prescription. Alternative methods to assess symptom limited exercise tolerance will be needed for those unable to undergo treadmill testing.

**Performance Measure 3i – Individualized assessment of nutrition habits**

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

1. Assessment of nutrition habits, using a valid and reliable assessment tool, with standard goals as defined by the most recent AHA Diet and Lifestyle Recommendations Scientific Statement (54).
2. If nutrition habits are suboptimal, a nutrition intervention plan is recommended to the patient and communicated to the primary care provider and/or cardiologist. This should include education and counseling regarding dietary goals and how to attain them and/or referral for individualized nutritional counseling.
3. Prior to completion of the cardiac rehabilitation program, nutrition habits are reassessed. If nutrition habits are suboptimal, the nutrition intervention plan is communicated to the primary care provider and/or cardiologist.

<b>Numerator</b>	Number of patients in the healthcare system's cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system's program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>
<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet

**Rationale**

Healthy dietary patterns are associated with a substantially reduced risk of CVD and CVD risk factors (54).

See also the rationale section from Performance Measure 3a.

**Corresponding Guidelines and Clinical Recommendations**

*National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (ATP III). Third Report of the National Cholesterol Education Program (NCEP) (70)*

Category of Type of Evidence C (from the NCEP classification system in which type C is based on observational and metabolic studies)

An atherogenic diet is a major, modifiable risk factor for CHD. (Strength of Evidence 1, from the NCEP classification system, in which strength of evidence 1 is based on very strong evidence)

*AHA Scientific Statement: Diet and Lifestyle Recommendations Revision 2006 (54)*

(No Class of Recommendation or Level of Evidence given)

The recommendations are to 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 <300mg/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**

In some patients, successful individualized nutritional intervention may require referral to an appropriately trained nutrition specialist.

**Performance Measure 3j – Individualized assessment of the use of preventive medications**

For each eligible patient with coronary artery disease enrolled in the cardiac rehabilitation 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 with appropriate preventive medications, as recommended in the AHA/ACC secondary prevention guidelines.

<b>Numerator</b>	Number of patients in the healthcare system’s cardiac rehabilitation program(s) who meet the performance measure
<b>Denominator</b>	Number of patients in the healthcare system’s program(s)
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	<p><u>Per Program:</u> Percent of patients who have had assessment, intervention, communication, and re-assessment (as defined above) concerning all modifiable risk factors Percent of patients who have had assessment, intervention, communication and follow-up (as defined above) concerning a single modifiable risk factor</p> <p><u>Per Patient:</u> Percent of the 10 risk factor measures for which there has been assessment, intervention, communication, and re-assessment (as defined above)</p>

<b>Sources of Data</b>	Electronic Health Records, retrospective paper medical records, prospective flow sheet
<p><b>Rationale</b></p> <p>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 ACE inhibitors/ARB agents, for instance) are also critically important in reducing recurrent cardiovascular events in patients enrolled in a cardiac rehabilitation program. A gap in their usage is common, but can be corrected with the help of systematic programs, such as cardiac rehabilitation programs, that can promote the appropriate use of preventive medications and thereby improve patient outcomes (29).</p> <p>See also the rationale section from Performance Measure 3a.</p> <p><b>Corresponding Guidelines and Clinical Recommendations</b>  <i>AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2006 Update (52)</i></p> <p>Class I              Use of Antiplatelet Agents, Renin-Angiotensin-Aldosterone System Blockers, and Beta-Blockers. (Level of Evidence B)</p> <p><b>Related Performance Measure Sets:</b>  <i>Clinical Performance Measures: Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement</i><sup>55</sup></p> <p>Percentage of Patients receiving: Antiplatelet Therapy, Drug Therapy for Lowering Cholesterol, or Beta-Blocker Therapy Post Myocardial Infarction</p> <p><i>ACC/AHA STEMI/NSTEMI Clinical Performance Measures (57)</i></p> <p>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.</p> <p><b>Challenges to Implementation</b>              Rehabilitation teams need to understand how current clinical practice guidelines relate to individual patients in order to optimize education.</p>	

**Cardiac Rehabilitation Performance Measurement Set B:  
Measure B-4**

**4. Monitor Response to Therapy and Document Program Effectiveness**

For each cardiac rehabilitation program in a healthcare system, a written policy is in place to:

1. Document the percentage of patients for whom the CR program has received a referral who actually enroll in the program.
2. Document for each patient a standardized plan to assess completion of the prescribed course of cardiac rehabilitation 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 cardiac rehabilitation, including at least one outcome measure for the core program components as outlined in the Cardiac Rehabilitation Performance Measure Set B, Performance Measure 3.
4. Describe the program’s methodology to document program effectiveness and initiate quality improvement strategies.

<b>Numerator</b>	Number of programs in the health system that meet these quality indicator criteria
<b>Denominator</b>	Number of programs in the health care system
<b>Period of Assessment</b>	Per reporting year
<b>Method of Reporting</b>	Inclusive data collection tracking sheet
<b>Sources of Data</b>	Evidence of policy in place or current AACVPR Program Certification

**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 cardiac rehabilitation program provides evidence of a standardized method to document individual patient outcomes on completion of the course of cardiac rehabilitation as defined on intake to the cardiac rehabilitation 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 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 (71).

The 2004 AACVPR Consensus Statement document suggests that “no single form [or] assessment protocol ... will fit the needs of all programs” (72). 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” (72).

Initiation and completion of the prescribed course of cardiac rehabilitation, as defined on admission assessment, are keys to promoting both life-long behavior change as well as physiologic adaptations from regular exercise. Comprehensive cardiac rehabilitation programs include core components designed to address secondary prevention issues which can improve with patient self management. Reassessment of outcomes measures after completion of cardiac rehabilitation 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.

**Clinical Recommendations:**

*AACVPR consensus statement. Outcomes evaluation in cardiac rehabilitation/secondary prevention programs: improving patient care and program effectiveness (72)*

(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 healthcare providers who also provide care for the referred patient

*Core components of cardiac rehabilitation/secondary prevention programs: 2006 Update (53)*

(No class of recommendation or level of evidence given)

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

## Appendix D: Sample Rating Form and Rating Form Guide

<b>Name of Measure:</b>					
<b>Clinical Rationale:</b>					
<b>Numerator:</b>					
<b>Denominator:</b>					
<b>Measure:</b>					
<b>Rate this measure on the following criteria.</b>	<i>DISAGREE</i>		<b>Moderate Agreement</b>	<b>Agree</b>	
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Useful in Improving Patient Outcomes</b>					
<b>1. Evidence-based:</b> The scientific basis of the measure is well established.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2. Interpretable:</b> The results of the measure are interpretable by practitioners.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3. Actionable:</b> The measure addresses an area that is under the practitioner's control.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Measure Design</b>					
<b>1. Denominator:</b> The patient group to whom this measure applies (denominator) is clinically meaningful.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2. Numerator:</b> The definition of conformance for this measure is clinically meaningful.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3. Validity:</b> <i>The measure appears to measure what it is intended to (face validity).</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a. The measure captures most meaningful aspects of care (content validity).	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
b. The measure correlates well with other measures of the same aspect of care (construct validity).	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>4. Reliability:</b> The measure is likely to be reproducible across organizations and delivery settings.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Measure Implementation</b>					
<b>1. Feasibility:</b> The data required for the measure is likely to be obtained with reasonable effort.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a. The data required for the measure is likely to be obtained at reasonable cost.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
b. The data required for the measure is likely to be obtained within the period allowed for data collection.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Overall Assessment</b>					
Considering your assessment of this measure on all dimensions above, rate this measure overall for inclusion into the performance measurement set.	<b>Do Not Include</b>		<b>Could Include</b>	<b>Must Include</b>	
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### Rating Form Guide

Attribute of Performance	Considerations
<b>Useful in Improving Patient Outcomes</b>	
1. <b>Evidence-based:</b> The scientific basis of the measure is well established.	This can be confirmed by explicit reference to a published clinical practice guideline.
2. <b>Interpretable:</b> 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. <b>Actionable:</b> 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.
<b>Measure Design</b>	
1. <b>Denominator:</b> 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. These criteria used must be clinically meaningful. An algorithm for determining the denominator may be present.
2. <b>Numerator:</b> The definition of conformance for this measure is clinically meaningful.	The numerator may be specified using either explicit or implicit criteria. These criteria used must be clinically meaningful. An algorithm for determining the numerator may be present.
3. <b>Validity:</b> a. <i>The measure appears to measure what it is intended to (face validity).</i>	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.
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).	
4. <b>Reliability:</b> The measure is likely to be reproducible across organizations and delivery settings.	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.
<b>Measure Implementation</b>	
1. <b>Feasibility:</b> a. The data required for the measure is likely to be obtained with reasonable effort.	From your perspective, the required data can be typically abstracted from patient charts or there are national registries, 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.
b. The data required for the measure is likely to be obtained at reasonable cost.	
c. The data required for the measure is likely to be obtained within the period allowed for data collection.	
<b>Overall Assessment</b>	
Considering your assessment of this measure on all dimensions above, rate this measure inclusion in the performance measurement set.	Consider a balance in the continuum of care. Consider overall purpose of the measurement set and the intended user.

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## *X. References*

1. Centers for Medicare and Medicaid Services. Decision Memo for Cardiac Rehabilitation Programs (CAG-00089R). US Department of Health & Human Services. 2006;
2. Wenger, N. K., Smith, L. K., Ades, P. A., Berra, K., Blumenthal, J. A., Certo, C. M., Dattilo, A. M., Davis, D., DeBusk, R. F., Drozda, J. P., Fletcher, B. J., Franklin, B. A., Greenland, P, McBride, P. E., McGregor, C. G. A., Oldridge, N. B., Piscatella, J. C., and Rogers, F. J. Cardiac Rehabilitation: Clinical Practice Guideline 17: U.S. Department of Health and Human Services; 1995. 1995;
3. Oldridge NB, Guyatt GH, Fischer ME, Rimm AA. Cardiac rehabilitation after myocardial infarction. Combined experience of randomized clinical trials. JAMA 1988; 260:945-50.
4. O'Connor GT, Buring JE, Yusuf S, et al. An overview of randomized trials of rehabilitation with exercise after myocardial infarction. Circulation 1989; 80:234-44.
5. Jolliffe JA, Rees K, Taylor RS, Thompson D, Oldridge N, Ebrahim S. Exercise-based rehabilitation for coronary heart disease. Cochrane Database Syst Rev 2001;CD001800.
6. McAlister FA, Lawson FM, Teo KK, Armstrong PW. Randomised trials of secondary prevention programmes in coronary heart disease: systematic review. BMJ 2001; 323:957-62.
7. Taylor RS, Brown A, Ebrahim S, et al. Exercise-based rehabilitation for patients with coronary heart disease: systematic review and meta-analysis of randomized controlled trials. Am J Med 2004; 116:682-92.
8. Clark AM, Hartling L, Vandermeer B, McAlister FA. Meta-analysis: secondary prevention programs for patients with coronary artery disease. Ann Intern Med 2005; 143:659-72.

9. Agency for Healthcare Research Technology Assessment Program. Randomized trials of secondary prevention programs in coronary artery disease: a systematic review. Agency for Healthcare Research and Quality. 2005;
10. Linden W, Stossel C, Maurice J. Psychosocial interventions for patients with coronary artery disease: a meta-analysis. Arch Intern Med 1996; 156:745-52.
11. Brown, A., Noorani, H., Stone, J., and Skidmore, B. Exercise-based cardiac rehabilitation programs for coronary artery disease: A systematic clinical and economic review. Technical overview #11. Ottawa: Canadian Coordinating Office for Health Technology Assessment. 2003;
12. Leon AS, Franklin BA, Costa F, et al. Cardiac rehabilitation and secondary prevention of coronary heart disease: an American Heart Association scientific statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in collaboration with the American association of Cardiovascular and Pulmonary Rehabilitation. Circulation 2005; 111:369-76.
13. Goble, A. J. Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention. Heart Research Centre. Melbourne, produced on behalf of the Victorian Department of Human Services. 1999;
14. New Zealand Guidelines Group. Cardiac Rehabilitation. Wellington, New Zealand: New Zealand Guidelines Group. 2002;
15. Giannuzzi P, Mezzani A, Saner H, et al. Physical activity for primary and secondary prevention. Position paper of the Working Group on Cardiac Rehabilitation and Exercise Physiology of the European Society of Cardiology. Eur J Cardiovasc Prev Rehabil 2003; 10:319-27.
16. Arbeitsgemeinschaft für kardiologische Rehabilitation und Sekundärprävention der Österreichischen Kardiologischen Gesellschaft OKG. Guidelines für die ambulante kardiologische Rehabilitation und Prävention in Österreich. J Kardiol 2004;303-9.
17. Stone JA, Arthur HM. Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention, second edition, 2004: Executive summary. Can J Cardiol 2005; 21 Suppl D:3D-19D.

18. Spertus JA, Eagle KA, Krumholz HM, Mitchell KR, Normand SL. American College of Cardiology and American Heart Association methodology for the selection and creation of performance measures for quantifying the quality of cardiovascular care. *Circulation* 2005; 111:1703-12.
19. Witt BJ, Jacobsen SJ, Weston SA, et al. Cardiac rehabilitation after myocardial infarction in the community. *J Am Coll Cardiol* 2004; 44:988-96.
20. Eagle KA, Guyton RA, Davidoff R, et al. ACC/AHA 2004 guideline update for coronary artery bypass graft surgery: summary article: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for Coronary Artery Bypass Graft Surgery). *Circulation* 2004; 110:1168-76.
21. Antman EM, Anbe DT, Armstrong PW, et al. ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction; A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the 1999 Guidelines for the Management of patients with acute myocardial infarction). *J Am Coll Cardiol* 2004; 44:E1-E211.
22. Braunwald E, Antman EM, Beasley JW, et al. ACC/AHA 2002 guideline update for the management of patients with unstable angina and non-ST-segment elevation myocardial infarction--summary article: a report of the American College of Cardiology/American Heart Association task force on practice guidelines (Committee on the Management of Patients With Unstable Angina). *J Am Coll Cardiol* 2002; 40:1366-74.
23. Gibbons RJ, Abrams J, Chatterjee K, et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina--summary article: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients With Chronic Stable Angina). *Circulation* 2003; 107:149-58.
24. Smith SC, Jr., Dove JT, Jacobs AK, et al. ACC/AHA guidelines of percutaneous coronary interventions (revision of the 1993 PTCA guidelines)--executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (committee to revise the 1993 guidelines for percutaneous transluminal coronary angioplasty). *J Am Coll Cardiol* 2001; 37:2215-39.

25. Hunt SA. ACC/AHA 2005 guideline update for the diagnosis and management of chronic heart failure in the adult: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure). *J Am Coll Cardiol* 2005; 46:e1-82.
26. Mosca L, Appel LJ, Benjamin EJ, et al. Evidence-based guidelines for cardiovascular disease prevention in women. *Circulation* 2004; 109:672-93.
27. Receipt of cardiac rehabilitation services among heart attack survivors-- 19 states and the District of Columbia, 2001. *MMWR Morb Mortal Weekly Report* 2003;1072-5.
28. Thomas RJ, Miller NH, Lamendola C, et al. National Survey on Gender Differences in Cardiac Rehabilitation Programs. Patient characteristics and enrollment patterns. *J Cardiopulm Rehabil* 1996; 16:402-12.
29. Fonarow GC, Gawlinski A, Moughrabi S, Tillisch JH. Improved treatment of coronary heart disease by implementation of a Cardiac Hospitalization Atherosclerosis Management Program (CHAMP). *Am J Cardiol* 2001; 87:819-22.
30. Balady GJ, Ades PA, Comoss P, et al. Core components of cardiac rehabilitation/secondary prevention programs: A statement for healthcare professionals from the American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation Writing Group. *Circulation* 2000; 102:1069-73.
31. Personal Communication with Abigail Lynn, AACVPR national office staff member. 10-31-2006;
32. Curnier DY, Savage PD, Ades PA. Geographic distribution of cardiac rehabilitation programs in the United States. *J Cardiopulm Rehabil* 2005; 25:80-4.
33. Squires R. Cardiac rehabilitation issues for heart transplant patient. *J Cardiopulm Rehabil* 1990.
34. Kobashigawa JA, Leaf DA, Lee N, et al. A controlled trial of exercise rehabilitation after heart transplantation. *N Engl J Med* 1999; 340:272-7.

35. Austin J, Williams R, Ross L, Moseley L, Hutchison S. Randomised controlled trial of cardiac rehabilitation in elderly patients with heart failure. *Eur J Heart Fail* 2005; 7:411-7.
36. Falcone RA, Hirsch AT, Regensteiner JG, et al. Peripheral arterial disease rehabilitation: a review. *J Cardiopulm Rehabil* 2003; 23:170-5.
37. Fletcher GF, Balady G, Blair SN, et al. Statement on exercise: benefits and recommendations for physical activity programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation* 1996; 94:857-62.
38. Get With the Guidelines Website.  
[http://www.americanheart.org/downloadable/heart/1055429944221GWTG\\_CAD\\_Discharge\\_Template.doc](http://www.americanheart.org/downloadable/heart/1055429944221GWTG_CAD_Discharge_Template.doc). 2006;
39. King ML, Williams MA, Fletcher GF, et al. Medical director responsibilities for outpatient cardiac rehabilitation/secondary prevention programs: a scientific statement from the American Heart Association/American Association for Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2005; 112:3354-60.
40. Pina IL, Balady GJ, Hanson P, Labovitz AJ, Madonna DW, Myers J. Guidelines for clinical exercise testing laboratories. A statement for healthcare professionals from the Committee on Exercise and Cardiac Rehabilitation, American Heart Association. *Circulation* 1995; 91:912-21.
41. Centers for medicare and Medicaid services. CMS National Coverage Determination for Cardiac Rehabilitation Programs. Publication Number 100-3; Manual Section Number 20:10; Version number 2. 2006;
42. American Heart Association. Fundamentals of BCLS for healthcare providers. American Heart Association, Dallas, TX. 2001;
43. American Heart Association. ACLS provider manual. American Heart Association, Dallas, TX. 2001;
44. Richardson LA, Buckenmeyer PJ, Bauman BD, Rosneck JS, Newman I, Josephson RA. Contemporary cardiac rehabilitation: patient characteristics and temporal trends over the past decade. *J Cardiopulm Rehabil* 2000; 20:57-64.

45. Van Camp SP, Peterson RA. Cardiovascular complications of outpatient cardiac rehabilitation programs. *JAMA* 1986; 256:1160-3.
46. Bunch TJ, White RD, Gersh BJ, et al. Long-term outcomes of out-of-hospital cardiac arrest after successful early defibrillation. *N Engl J Med* 2003; 348:2626-33.
47. AACVPR. Guidelines for cardiac Rehabilitation and Secondary Prevention Programs. Human Kinetics 2004.
48. Guidelines for risk stratification after myocardial infarction. American College of Physicians. *Ann Intern Med* 1997; 126:556-60.
49. Paul-Labrador M, Vongvanich P, Merz CN. Risk stratification for exercise training in cardiac patients: do the proposed guidelines work? *J Cardiopulm Rehabil* 1999; 19:118-25.
50. Zoghbi GJ, Sanderson B, Breland J, Adams C, Schumann C, Bittner V. Optimizing risk stratification in cardiac rehabilitation with inclusion of a comorbidity index. *J Cardiopulm Rehabil* 2004; 24:8-13.
51. Iestra JA, Kromhout D, van der Schouw YT, Grobbee DE, Boshuizen HC, van Staveren WA. Effect size estimates of lifestyle and dietary changes on all-cause mortality in coronary artery disease patients: a systematic review. *Circulation* 2005; 112:924-34.
52. Smith SC, Jr., Allen J, Blair SN, et al. AHA/ACC guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease: 2006 update endorsed by the National Heart, Lung, and Blood Institute. *J Am Coll Cardiol* 2006; 47:2130-9.
53. Balady G, Ades PA, Bittner V, et al. Core components of cardiac rehabilitation/secondary prevention programs: 2006 update. *J Cardiopulm Rehabil* 2006.
54. Lichtenstein AH, Appel LJ, Brands M, et al. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association Nutrition Committee. *Circulation* 2006; 114:82-96.

55. American College of Cardiology, American Heart Association, Physician Consortium for Performance Improvement. Clinical Performance Measures: Chronic Stable Coronary Artery Disease. Tools Developed by Physicians for Physicians. Physician Consortium for Performance Improvement. 2005;
56. Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. JAMA 2003; 289:2560-72.
57. Krumholz HM, Anderson JL, Brooks NH, et al. ACC/AHA clinical performance measures for adults with ST-elevation and non-ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measures (Writing Committee to Develop Performance Measures on ST-Elevation and Non-ST-Elevation Myocardial Infarction). J Am Coll Cardiol 2006; 47:236-65.
58. Thompson PD, Buchner D, Pina IL, et al. 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). Circulation 2003; 107:3109-16.
59. Power D. Standards of medical care in diabetes. Diabetes Care 2006; 29:476-7.
60. Sigal RJ, Kenny GP, Wasserman DH, Castaneda-Sceppa C, White RD. Physical activity/exercise and type 2 diabetes: a consensus statement from the American Diabetes Association. Diabetes Care 2006; 29:1433-8.
61. Schleifer SJ, Ari-Hinson MM, Coyle DA, et al. The nature and course of depression following myocardial infarction. Arch Intern Med 1989; 149:1785-9.
62. Lane D, Carroll D, Ring C, Beevers DG, Lip GY. The prevalence and persistence of depression and anxiety following myocardial infarction. Br J Health Psychol 2002; 7:11-21.
63. Frasure-Smith N, Lesperance F, Talajic M. Depression following myocardial infarction. Impact on 6-month survival. JAMA 1993; 270:1819-25.

64. Lesperance F, Frasura-Smith N, Juneau M, Theroux P. Depression and 1-year prognosis in unstable angina. *Arch Intern Med* 2000; 160:1354-60.
65. Zellweger MJ, Osterwalder RH, Langewitz W, Pfisterer ME. Coronary artery disease and depression. *Eur Heart J* 2004; 25:3-9.
66. Herridge ML, Stimler CE, Southard DR, King ML. Depression screening in cardiac rehabilitation: AACVPR Task Force Report. *J Cardiopulm Rehabil* 2005; 25:11-3.
67. Guidelines for Exercise Testing and Prescription. 7th ed: Philadelphia: Lippincott, Williams & Wilkins. 2005;
68. Fletcher GF, Balady GJ, Amsterdam EA, et al. Exercise standards for testing and training: a statement for healthcare professionals from the American Heart Association. *Circulation* 2001; 104:1694-740.
69. Gibbons RJ, Balady GJ, Bricker JT, et al. ACC/AHA 2002 guideline update for exercise testing: summary article. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1997 Exercise Testing Guidelines). *J Am Coll Cardiol* 2002; 40:1531-40.
70. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) final report. *Circulation* 2002; 106:3143-421.
71. Krumholz HM, Peterson ED, Ayanian JZ, et al. Report of the National Heart, Lung, and Blood Institute working group on outcomes research in cardiovascular disease. *Circulation* 2005; 111:3158-66.
72. 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.