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Clinical UM Guideline

Subject: Outpatient Cardiac Rehabilitation
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Description

This document addresses cardiac rehabilitation services that are provided on an outpatient basis during the immediate post-discharge period and are considered Phase II cardiac rehabilitation programs (see Discussion/General Information section for further information related to the phases of Cardiac Rehabilitation Programs).

Clinical Indications

Medically Necessary:

Phase II cardiac rehabilitation is considered **medically necessary** when individually prescribed by a physician and the following criteria are met:

I. Cardiac rehabilitation is initiated within 12 months of ANY of the following:
   A. Acute myocardial infarction (MI); **or**
   B. Coronary artery bypass grafting (CABG); **or**
   C. Heart transplantation; **or**
   D. Percutaneous coronary intervention (that is, atherectomy, angioplasty, stenting); **or**
   E. Survivor of sudden cardiac death; **or**
   F. Survivor of sustained ventricular tachycardia or fibrillation; **or**
   G. Valve replacement or repair; **or**
   H. New York Heart Association (NYHA) Class II to IV congestive heart failure (CHF) that is interfering with the ability to perform age-related activities of daily living; **or**
   I. Coronary artery disease (CAD) with chronic stable angina pectoris that has failed to respond to pharmacotherapy and is interfering with the ability to perform age-related activities of daily living;
   and

II. The individual does not have an absolute contraindication to cardiac rehabilitation (examples include: unstable angina, overt cardiac failure, dangerous arrhythmias, dissecting aneurysm, myocarditis, acute pericarditis, severe obstruction of the left ventricular outflow tract, severe hypertension, exertional hypotension or syncope, uncontrolled diabetes mellitus, severe orthopedic limitations, and recent systemic or pulmonary embolus);
and

III. A formal exercise stress test has been completed following the qualifying cardiac event and *prior to* initiation of the rehabilitation program or, for individuals at low risk based on current symptoms, clinical features and exercise history, during the first rehabilitation session.

Not Medically Necessary:

The following are considered **not medically necessary:**

1. When the criteria above are not met;
2. Phase III cardiac rehabilitation programs, or self-directed, self-controlled or monitored exercise programs;
3. Phase IV cardiac rehabilitation programs or maintenance therapy that may be safely carried out without medical supervision;
4. Cardiac rehabilitation when used in a preventive or prophylactic way, such as for angina, hypertension, or diabetes.

Place of Service and Frequency/Duration

Place of Service: Ambulatory, Outpatient Facility

Frequency/Duration:
The frequency and duration of treatment is determined by the following:

- The cardiac risk level; **and**
- The degree of exercise limitation as demonstrated by a treadmill electrocardiogram (ECG) stress test.

High Risk:
Individuals in the *high-risk* category may have ANY of the following:

- Exercise test limited to less than or equal to 5 metabolic equivalents (METS). (MET = a multiple of the resting energy expenditure, and is used as a means of estimating cardiac functional capacity. [1 MET = 3.5ml O2/kg body wt/min]); **or**
- Marked exercise-induced ischemia, as indicated by either anginal pain or 2 mm or more ST segment depression by ECG; **or**
- Severely depressed left ventricular function (ejection fraction less than 30%); **or**
- Resting complex ventricular arrhythmias; **or**
- Ventricular arrhythmias appearing or increasing with exercise or occurring in the recovery phase of stress testing; **or**
- Decrease in systolic blood pressure of greater than 15 mm Hg with exercise **or**
- Recent myocardial infarction (less than 6 months) which was complicated by serious ventricular arrhythmias, cardiogenic shock, or congestive heart failure (CHF); **or**
- Survivor of sudden cardiac arrest.

Cardiac rehabilitation programs for *high-risk* individuals may include the following:

- 36 sessions (e.g., 3x/wk x 12 wks) of supervised exercise with continuous telemetry monitoring; **and**
- Educational program for risk factor/stress reduction; **and**
- Creation of an individual outpatient exercise program that can be self-monitored and maintained.

Note: If no clinically significant arrhythmia is documented during the first three weeks of the program, the remaining portion may be completed without telemetry monitoring.

Intermediate Risk:
Individuals in the *intermediate risk* category may have ANY of the following:

- Exercise test limited to 6-9 METS; **or**
- Ischemic ECG response to exercise of less than 2 mm of ST segment depression; **or**
- Uncomplicated myocardial infarction, coronary artery bypass surgery, or angioplasty and has a post-cardiac event maximal functional capacity of 8 METS or less on ECG exercise test.

Cardiac rehabilitation programs for *intermediate risk* individuals may include the following:

- Provide exercise training for 24 sessions or less of exercise training without continuous ECG monitoring (Note: Some individuals may require less than 3x/wk x 8 wks); **and**
- Be geared towards defining an ongoing exercise program that is self-administered.

Low Risk:
Individuals in the *low risk* category may have ANY of the following:

- Exercise test limited to greater than 9 METS; **or**
- Asymptomatic at rest.

Cardiac rehabilitation programs for *low risk* individuals may include the following:

- 6 one-hour sessions involving risk factor reduction education; **and**
- Supervised exercise to show safety and define a home program (for example 3x/week x 2wks or 2x/week x 3wks).

Additional cardiac rehabilitation services are considered **medically necessary** based on the above listed criteria in the event the individual has ANY of the following:

- Another documented myocardial infarction or extension of initial infarction; **or**
- Another cardiovascular surgery or angioplasty; **or**
- New evidence of ischemia on an exercise test, including thallium scan; **or**
- New clinically significant coronary lesions documented by cardiac catheterization.

Coding

The following codes for treatments and procedures applicable to this document are included below for informational purposes. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement policy. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

When services may be Medically Necessary when criteria are met:

CPT	
93797	Physician or other qualified health care professional services for outpatient cardiac rehabilitation; without continuous ECG monitoring (per session)
93798	Physician or other qualified health care professional services for outpatient cardiac rehabilitation; with continuous ECG monitoring (per session)
HCPCS	
G0422	Intensive cardiac rehabilitation, with or without continuous ECG monitoring with exercise, per session
G0423	Intensive cardiac rehabilitation, with or without continuous ECG monitoring without exercise, per session
S9472	Cardiac rehabilitation program, non-physician provider, per diem
ICD-10 Diagnosis	
	All diagnoses

When services are Not Medically Necessary:
For the procedure codes listed above when criteria are not met, or when the code describes a procedure or situation designated in the Clinical Indications section as not medically necessary.

Discussion/General Information

Cardiac rehabilitation (CR) is a program of multidisciplinary interventions, designed to assist clinically suitable individuals to attain and maintain their optimal level of functioning. Over the past 20 years, risk factor modification programs for individuals with cardiac conditions, commonly referred to as cardiac rehabilitation or CR, have evolved into a comprehensive management strategy. The American Heart Association (AHA) and the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) define CR programs as, “Coordinated, multifaceted interventions designed to optimize a cardiac patient’s physical, psychological, and social functioning, in addition to stabilizing, slowing, or even reversing the progression of the underlying atherosclerotic processes, thereby reducing morbidity and mortality” (Leon, 2005). Interventions include, “Baseline patient assessments, nutritional counseling, aggressive risk factor management, (i.e., lipids, hypertension, weight, diabetes, and smoking), psychosocial and vocational counseling, and physical activity counseling and exercise training, in addition to the appropriate use of cardioprotective drugs” (Leon, 2005).

According to a 2007 scientific statement from the AHA and the AACVPR (Balady, 2007), which addresses the core components of cardiac rehabilitation/secondary prevention programs, the following is noted:

> Symptom-limited exercise testing is strongly recommended prior to participation in an exercise-based CR program. The evaluation may be repeated as changes in clinical condition warrant. Test parameters should include assessment of heart rate and rhythm, signs, symptoms, ST-segment changes, hemodynamics, perceived exertion,

and exercise capacity. On the basis of patient assessment and the exercise test if performed, it is recommended to risk stratify the patient to determine the level of supervision and monitoring required during exercise training.

A multicenter, randomized controlled trial enrolled 2331 medically stable individuals with heart failure (HF) and reduced ejection fraction who were randomized to receive either usual care plus aerobic exercise training (36 supervised sessions followed by home-based training [traditional CR model]) or usual care alone. The study's primary endpoints included all-cause mortality or hospitalization and prespecified secondary endpoints of all-cause mortality, cardiovascular mortality or hospitalization, and cardiovascular mortality or HF-related hospitalization. In this study sample, 28% of participants were women, and 37% had New York Heart Association (NYHA) class III or IV symptoms. A total of 759 (65%) participants in the exercise-based CR group died or were hospitalized, compared with 796 (68%) in the usual care group (hazard ratio [HR]=0.93; 95% confidence interval [CI], 0.84-1.02; p=0.13). There were nonsignificant reductions in the exercise-based CR group for mortality (189 [16%] in the exercise group vs 198 [17%] in the usual care group; HR=0.96; 95% CI, 0.79-1.17; p=0.70), cardiovascular mortality or cardiovascular hospitalization (632 [55%] in the exercise group vs 677 [58%] in the usual care group; HR=0.92; 95% CI, 0.83-1.03; p=0.14), and cardiovascular mortality or HF hospitalization (344 [30%] in the exercise group vs 393 [34%] in the usual care group; HR=0.87; 95% CI, 0.75-1.00; p=0.06). A prespecified supplementary analyses adjusted for highly prognostic baseline characteristics, the resulting HR for all-cause mortality or hospitalization was 0.89 (95% CI, 0.81-0.99; p=0.03), for cardiovascular mortality or cardiovascular hospitalization the HR was 0.91 (95% CI, 0.82-1.01; p=0.09), and for cardiovascular mortality or HF hospitalization the HR was 0.85 (95% CI, 0.74-0.99; p=0.03). Authors concluded that in the protocol-specified primary analysis, exercise-based CR resulted in nonsignificant reductions in the primary endpoint of all-cause mortality or hospitalization and after adjustment for highly prognostic predictors of the primary endpoint, was associated with modest but significant reductions for both all-cause mortality or hospitalization and cardiovascular mortality or HF hospitalization (O'Connor, 2009).

Goel and colleagues (2011) conducted a retrospective review which looked at 2395 individuals over a 14 year period that underwent percutaneous coronary intervention. Of the 2395 individuals who underwent percutaneous coronary intervention, 964 of them enrolled in CR following the intervention. Mean follow-up was 6.3 years. During that time, there were 503 deaths, of which 199 were due to cardiovascular disease. Revascularization was required in 755 individuals and 394 individuals had subsequent myocardial infarction. The authors reported a 45% to 47% decrease in mortality of those individuals who participated in CR after percutaneous intervention compared with those individuals who did not participate in CR.

A study by Lee and colleagues (2014) reported on 576 individuals who were post drug-eluting stent implantation for coronary artery disease who were then referred for CR. A total of 288 participants successfully completed the CR program. The primary endpoint was in-stent luminal loss at a 9-month angiographic follow-up. Those who completed the CR program had a 35% less in-stent luminal loss when compared to those who didn't complete the CR. Those in the CR group also showed an improvement in overall risk factors including current smoking, biochemical profiles, depression, obesity and exercise capacity.

A Cochrane review investigating the effect of exercise-based CR on individuals with HF included 44 studies which were comprised of 5783 participants. All studies included a 'no formal exercise' training intervention comparator, although a wide range of comparators were seen across studies (such as, education, psychological intervention or usual medical care alone). The review concluded that there were probable benefits of exercise-based CR, including a reduction in the risk of overall hospital admissions in the short term, as well as a potential reduction in HF-related admissions. The effect of exercise-based rehabilitation on health-related quality of life (QoL) for individuals with HF remains uncertain due to 'very low-quality evidence' as rated by the GRADE method. Authors conclude that exercise-based rehabilitation may make little or no difference in all-cause mortality in the short-term (less than 12 months; risk ratio [RR]=0.89, 95% CI, 0.66-1.2) but may impact all-cause mortality in the longer-term (RR 0.88, 95% CI, 0.75 to 1.02; high-quality evidence) and that further evidence is needed to better elucidate the effects of exercise-based CR on individuals with HF in both the long and short-term (Long, 2019b).

Another Cochrane review investigating the effect of exercise-based CR on individuals with implantable ventricular assist devices (VADs) included two studies which combined were comprised of just 40 participants. In the studies, exercise-based CR consisted of aerobic training, resistance training, or both three times per week for 6 to 8 weeks. Exercise intensity was measured as 50% of oxygen consumption (VO2) reserve, or 60% to 80% of heart rate reserve. A large difference in quality of life was observed between groups at the end of follow-up (standardized mean difference 0.88, 95% CI, 0.12-1.88). The effectiveness of exercise-based CR was not realized due to the age of participants (relatively young), high risk of performance bias and small sample size, which resulted in very low-quality evidence (using GRADE method). Ideally, well-designed clinical trials would also measure the effect of exercise-based CR on mortality, rehospitalization or heart transplantation, but these outcomes were not reported in either study. Cochrane authors concluded that, "evidence is currently inadequate to assess the safety and efficacy of exercise-based CR for people with implantable VADs compared with usual care" (Yamamoto, 2018).

A systematic review was conducted to summarize and characterize the current state of evidence related to the effects of exercise-based CR on the health-status of individuals diagnosed with stable angina. A total of 7 studies, which included 581study participants in total met the criteria for analysis. The effect of exercise-based CR on all-cause mortality (RR=1.01, 95% CI, 0.18-5.67), acute myocardial infarction (RR=0.33, 95% CI, 0.07-1.63) and cardiovascular-related hospital admissions (RR=0.14, 95% CI, 0.02 to 1.1) relative to control were not determined to be statistically significant. Exercise-based CR was determined to have a moderately positive impact on exercise capacity (standard mean difference 0.45, 95% CI, 0.20 to 0.70), though this was based on low-quality evidence (GRADE method). There was limited and very low-quality evidence on the effect of exercise-based CR on health related QoL measures. Authors concluded that exercise-based CR may improve short-term exercise capacity in individuals with stable angina but well-designed, randomized controlled clinical trials are needed to definitely determine the impact on outcomes including mortality, morbidity and QoL (Long, 2019a).

Exercise training is the principal component of CR, since it results in increased peak exercise capacity, which is usually expressed in METs (metabolic equivalents). This is the total oxygen requirement of the body, with 1 MET equal to 3.5 mL of oxygen consumed per kilogram of body weight per minute. Exercise training improves MET capacity by 10% to 50%, resulting in improved oxygen delivery and extraction by exercising skeletal muscles, thereby decreasing the cardiovascular requirements of exercise and increasing the amount of work that can be done before ischemia occurs. Although dynamic aerobic exercise is necessary to improve cardiovascular endurance, resistance exercise is becoming a useful adjunctive component of the exercise regimen as well. Resistance training should be included in the exercise program to minimize loss of muscle mass.

A few small studies suggest virtual reality-enhanced cardiac rehabilitation may provide improvements in the outcomes, adherence, and satisfaction.

Garcia-Bravo and colleagues (2020) conducted a randomized pilot clinical trial to determine the effects of virtual reality program as a complementary tool to stage II cardiac rehabilitation. The study recruited 26 participants but 6 did not complete the program. The control group (n=10) received conventional cardiac rehabilitation and the experimental group (n=10) received conventional cardiac rehabilitation along with physical exercise through virtual reality and video games. No significant differences were observed between the two groups when reviewing outcomes. The Client Satisfaction Survey showed an average score of 31.60 (±0.96) for the experimental group and 30.70 (±2.86) for the control group. The study noted that virtual reality protocol could be an alternative and

that focus of future studies should be on compliance to physical exercise in stage III of cardiac rehabilitation with virtual reality by follow-up evaluations.

Gulick and colleagues (2021) completed a randomized controlled trial to evaluate if virtual reality program incorporated with cardiac rehabilitation program could increase patient's motivation, understanding and adherence. The study contained 72 individuals, 31 in the control group and 41 in the intervention group. The control group received standard cardiac rehabilitation care. While the intervention group received standard cardiac rehabilitation care, except the treadmill component used the Bionautica Trails system, a virtual reality platform. Results showed the control group had higher completion rates (P=.02; 95% CI 0.04-0.53). There were no significant differences in the 6-minute walk test (6MWT), the control group improved by an average of 298 feet and the intervention group by 340 feet. Author concluded that to determine if virtual walking trails are worth implementing in stage II cardiac rehabilitation, additional studies are required.

CR programs are generally divided into four phases: phase I, inpatient or recovery phase; phase II, outpatient or intermediate phase; phase III, community-based or home long-term phase; phase IV, maintenance (Thompson, 2007).

Phases of Cardiac Rehabilitation

Phase	Type of Program	Duration	Description
I	Inpatient	Days	• Inpatient or recovery phase. • Begins as soon as the individual is medically stable following a cardiac event (e.g., myocardial infarction, bypass surgery) and continues while the individual remains in the hospital. • Consists of 1) early assumption of upright posture; 2) progressive exercise and self-care based on individual tolerance; 3) education; and 4) risk factor identification and initial attempts at modification.
II	Outpatient, immediately after hospitalization	2 – 12 weeks	• Outpatient or intermediate phase. • Initiated within a few weeks after hospital discharge. • Consists of 1) supervised exercise training to maximize functional capacity, teach safe exercise practices, and identify individuals at risk for complications; 2) risk factor modification; and 3) education about medications, signs and symptoms of heart disease and its progression, dietary modifications and activity guidelines.
III	Late recovery period	Minimum of 6 months beyond phase II	• Community-based or home long-term phase. • Consists of a lifelong program committed to encourage exercise and a healthful lifestyle to minimize recurrence of cardiac problems. • Such programs are usually undertaken at home or in a fitness center.
IV	Maintenance	Indefinite	• Consists of efforts to modify risk factors and a routine program of physical activity that individuals should continue indefinitely. • For some programs, phase IV rehabilitation is combined with phase III. All cardiac rehabilitation programs, however, recommend some form of indefinite maintenance for their participants.

Definitions

Duke Treadmill Score (DTS): A quantitative means of expressing cardiac risk derived entirely from the exercise ECG. It incorporates ST segment deviation (depression or elevation), treadmill time (METS) and exercise-induced angina. The angina index has a value of 0 if there is no angina during exercise, 1 if the individual had non-limiting angina and 2 if angina was the reason the individual stopped exercising. The typical observed range for the DTS is highest risk of –25 to lowest risk of +15.

New York Heart Association (NYHA) Classes of Heart Failure:

Class	Patient Symptoms
I	No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea (shortness of breath).
II	Slight limitation of physical activity. Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea (shortness of breath).
III	Marked limitation of physical activity. Comfortable at rest. Less than ordinary activity causes fatigue, palpitation, or dyspnea.
IV	Unable to carry on any physical activity without discomfort. Symptoms of heart failure at rest. If any physical activity is undertaken, discomfort increases.

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11. Risom SS, Zwisler AD, Rasmussen TB, et al. Cardiac rehabilitation versus usual care for patients treated with catheter ablation for atrial fibrillation: Results of the randomized CopenHeartRFA trial. Am Heart J. 2016; 181:120-129.
12. Sibilitz KL, Berg SK, Rasmussen TB, et al. Cardiac rehabilitation increases physical capacity but not mental health after heart valve surgery: a randomised clinical trial. Heart. 2016; 102(24):1995-2003.
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Government Agency, Medical Society, and Other Authoritative Publications:

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History

Status	Date	Action
Revised	11/09/2023	Medical Policy & Technology Assessment Committee (MPTAC) review. Added “When the criteria above are not met” to Not Medically Necessary statement. Updated References and Websites section. Corrected date error in History section.
Reviewed	11/10/2022	MPTAC review. Updated References and Websites section.
Reviewed	11/11/2021	MPTAC review. Updated Discussion/General Information, References, and Websites sections.
Reviewed	11/05/2020	MPTAC review. Updated References and Websites sections. Reformatted Coding section.
Revised	11/07/2019	MPTAC review. Clarified Clinical Indications section. Updated Description, Place of Service and Frequency/Duration, Discussion/General Information, Definitions, References and Websites sections.
Revised	01/24/2019	MPTAC review. Revised Medically Necessary criteria to include Class II CHF individuals and remove need to have failed pharmacotherapy. Updated Websites for Additional Information section.
Reviewed	09/13/2018	MPTAC review. Updated References and Websites for Additional Information sections.
Reviewed	11/02/2017	MPTAC review. The document header wording updated from “Current Effective Date” to “Publish Date.” Updated References section.
Reviewed	11/03/2016	MPTAC review. Updated formatting in Clinical Indications section. Updated Discussion/General Information and Reference sections.
Revised	11/05/2015	MPTAC review. Title changed to Outpatient Cardiac Rehabilitation. Clarification to Clinical Indications. Updated References. Removed ICD-9 codes from Coding section.
Reviewed	11/13/2014	MPTAC review. Updated Discussion/General Information and References.
Revised	11/14/2013	MPTAC review. Clarification to the Medically Necessary statement. Updated References.
Reviewed	11/08/2012	MPTAC review. Updated Discussion/General Information and References. Updated Coding section with 01/01/2013 CPT descriptor changes; removed revenue code 0943.
Reviewed	11/17/2011	MPTAC review. Updated Coding, Description, Discussion/General Information, References and Web Sites for Additional Information.
Reviewed	11/18/2010	MPTAC review. Updated Discussion/General Information and References.
Reviewed	11/19/2009	MPTAC review. No change to criteria. References were updated. Updated Coding section with 01/01/2010 HCPCS changes.
Revised	11/20/2008	MPTAC review. A criterion was revised to clarify the timing and need for pre-rehab program stress testing or for testing during the first CR session for low risk patients. The requirement under ‘Frequency/Duration’ of services for pre-rehab testing within three weeks of initiating the CR Program was removed. Also, the time for initiation of a Cardiac Rehab Program following the qualifying cardiac event was changed from six months to within twelve months. Annual review was also performed. Discussion section and References were also updated.
Reviewed	05/15/2008	MPTAC review. No change to criteria. References were updated.
Reviewed	05/17/2007	MPTAC review. No change to guideline criteria. References were updated.
Reviewed	06/08/2006	MPTAC review. No change to guideline criteria. The Discussion section and References updated to include the 2005 AHA/AACVPR guideline and the 2005 AHRQ Technology Assessment.
	11/17/2005	Added reference for Centers for Medicare and Medicaid Services (CMS) – National Coverage Determination (NCD).
Revised	09/22/2005	MPTAC review. Revision based on Pre-merger Anthem and Pre-merger WellPoint Harmonization.

Pre-Merger Organizations	Last Review Date	Document Number	Title
Anthem Midwest	04/08/2005	RA-011	Cardiac Rehabilitation (Midwest Medical Review & Utilization Management Criteria)
Anthem West Region	10/01/2004	UMR.001	Cardiac Rehabilitation, Outpatient
Anthem Southeast	N/A	Memo 1111	Cardiac Rehabilitation
Anthem CT			Cardiac Rehabilitation Benefit Detail
Anthem ME			Cardiac Rehabilitation Benefit Detail
WellPoint Health Networks, Inc.	12/02/2004	2.04.01	Cardiac Rehabilitation
	12/02/2004	Clinical Guideline	Cardiac Rehabilitation

UM Guideline, please contact the customer service number on the member's card.

Alternatively, commercial or FEP plans or lines of business which determine there is not a need to adopt the guideline to review services generally across all providers delivering services to Plan’s or line of business’s members may instead use the clinical guideline for provider education and/or to review the medical necessity of services for any provider who has been notified that his/her/its claims will be reviewed for medical necessity due to billing practices or claims that are not consistent with other providers, in terms of frequency or in some other manner.