Clinical Policy Bulletin: Cardiac Rehabilitation

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Policy

Aetna considers outpatient cardiac rehabilitation medically necessary as described below.

The following selection criteria represent implementation of guidelines established by the American College of Physicians, the American College of Cardiology, and the Agency for Healthcare Research and Quality (AHRQ) Health Technology Assessment.

Eligibility:

Aetna considers a medically supervised cardiac rehabilitation program medically necessary for selected members when it is individually prescribed by a physician within a 12 month window after any of the following:

1. Acute myocardial infarction; or
2. Chronic stable angina pectoris unresponsive to medical therapy which prevents the member from functioning optimally to meet domestic or occupational needs (particularly with modifiable coronary risk factors or poor exercise tolerance); or
3. Coronary artery bypass grafting (CABG); or
4. Heart transplantation or heart-lung transplantation; or
5. Major pulmonary surgery, great vessel surgery, or MAZE arrhythmia surgery; or
6. Percutaneous coronary vessel remodeling (i.e., angioplasty, atherectomy, stenting); or
7. Placement of a ventricular assist device; or
8. Sustained ventricular tachycardia or fibrillation, or survivors of sudden cardiac death; or
9. Valve replacement or repair; or
10. Stable congestive heart failure (CHF) with left ventricular ejection fraction of 35% or less and New York Heart Association (NYHA) class II to IV symptoms despite being on optimal heart failure therapy for at least 6
weeks; stable CHF is defined as CHF in persons who have not had recent (less than or equal to 6 weeks) or planned (less than or equal to 6 months) major cardiovascular hospitalizations or procedures.

Aetna considers cardiac rehabilitation experimental and investigational for all other indications (e.g., individuals who are too debilitated to exercise, postural tachycardia syndrome, and secondary prevention after transient ischemic attack or mild, non-disabling stroke) because of insufficient evidence in the peer-reviewed literature.

**Frequency and Duration**

The medically necessary frequency and duration of cardiac rehabilitation is determined by the member’s level of cardiac risk stratification:

I. High-risk members have *any* of the following:

- Decrease in systolic blood pressure of 15 mm Hg or more with exercise; or
- Exercise test limited to less than or equal to 5 metabolic equivalents (METS); or
- Marked exercise-induced ischemia, as indicated by either anginal pain or 2 mm or more ST depression by electrocardiography (ECG); or
- Recent myocardial infarction (less than 6 months) which was complicated by serious ventricular arrhythmia, cardiogenic shock or congestive heart failure; or
- Resting complex ventricular arrhythmia; or
- Severely depressed left ventricular function (ejection fraction less than 30%); or
- Survivor of sudden cardiac arrest; or
- Ventricular arrhythmia appearing or increasing with exercise or occurring in the recovery phase of stress testing.

Program Description for High-Risk Members:

- 36 sessions (e.g., 3 times per week for 12 weeks) of supervised exercise with continuous telemetry monitoring
- Create an individual out-patient exercise program that can be self-monitored and maintained
- Educational program for risk factor/stress reduction
- If no clinically significant arrhythmia is documented during the first 3 weeks of the program, the provider may have the member complete the remaining portion without telemetry monitoring.

II. Intermediate-risk members 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 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.

Program Description for Intermediate-Risk Members:

24 sessions or less of exercise training without continuous ECG monitoring (see exit criteria below, as some members may only require fewer than 3 weekly visits and/or less than 8 weeks)*

Geared to define an ongoing exercise program that is "self-administered."

III. Low-risk members have exercise test limited to greater than 9 METS

Program Description for Low-Risk Members:

- 6 1-hour sessions involving risk factor reduction education and supervised exercise to show safety and define a home program (e.g., 3 times per week for a total of 2 weeks or 2 sessions per week for 3 weeks).

Aetna considers additional cardiac rehabilitation services medically necessary based on the above-listed criteria when the member has any of the following conditions:

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

*Supervision by a physician or other qualified health care professional is of no proven value for non-EKG monitored cardiac rehabilitation and is therefore considered experimental and investigational because of insufficient evidence in the peer-reviewed literature.

Background

Patients who have cardiovascular events are often functional in society and employed prior to a cardiac event, and frequently require only re-entry into their former life pattern. Cardiac rehabilitation serves this purpose by providing a supervised program in the outpatient setting that involves medical evaluation, an ECG-monitored physical exercise program, cardiac risk factor modification, education, and counseling.

Traditionally, cardiac rehabilitation programs have been classified into 4 phases, phase I to IV, representing a progression from the hospital (phase I) to a medically supervised out-patient program (phases II and III) to a community or home-based setting (phase IV). Due to changes in hospital and health care practices, and the
need to accommodate patients at various stages of disease risk, the need for phase designation becomes inappropriate. Cardiac rehabilitation programs can be more appropriately distinguished as inpatient, outpatient or community/home-based programs. Participation within these programs is determined by appropriate risk stratification in order to maximize health care resources and patient benefit. Irrespective of the program, there should be regular communication, in the form of progress reports, between the program staff and the patient’s attending physician (Ignszewski and Lear, 1998).

Entry into such programs is based on the demonstrated limitation of functional capacity on exercise stress testing, and the expectation that medically supervised exercise training will improve functional capacity to a clinically significant degree. The exercise test in cardiac rehabilitation is a vital component of the overall rehabilitative process as it provides continuous follow-up in a noninvasive manner and adds information to the overall physical evaluation. In general, testing is performed before entering the cardiac rehabilitation exercise program, and sequentially during the program to provide information on the changes in cardiac status, prognosis, functional capacity, and evidence of training effect. The central component of cardiac rehabilitation is a prescribed regimen of physical exercises intended to improve functional work capacity and to increase the patient's confidence and well-being. Depending on the degree of debilitation, cardiac patients may or may not require a full or supervised rehabilitation program.

The scientific literature documents that some of the benefits of participation in a cardiac rehabilitation program include decreased symptoms of angina pectoris, dyspnea, and fatigue, and improvement in exercise tolerance, blood lipid levels, and psychosocial well-being, as well as a reduction in weight, cigarette smoking and stress. The efficacy of modification of risk factors in reducing the progression of coronary artery disease and future morbidity and mortality has been established. Meta-analysis of data from random controlled studies indicates a 20% to 25% reduction in mortality in patients participating in cardiac rehabilitation following myocardial infarction as compared to controls.

The typical model for delivering outpatient cardiac rehabilitation in the United States is for patients to attend sessions 2 to 3 times per week for up to 12 to 18 weeks (36 total sessions) (CMS, 2006). A session typically lasts for approximately 1 hour and includes aerobic and/or resistance exercises with continuous electro-cardiographic monitoring. There are alternative approaches to this typical model. Patients can be classified as low-, moderate- or high-risk for participating in exercise based on a combination of clinical and functional data. The number of recommended supervised exercise sessions varies by risk level: low-risk patients receive 6 to 18 exercise sessions over 30 days or less from the date of the cardiac event/procedure; moderate-risk 12 to 24 sessions over 60 days; and high-risk 18 to 36 sessions over 90 days (Hamm, 2008; AACVPR, 2004).

There is limited evidence on the appropriate duration of cardiac rehabilitation. Hammill et al (2010) stated that for patients with coronary heart disease, exercise-based cardiac rehabilitation improves survival rate and has beneficial effects on risk factors for coronary artery disease. However, the relationship between the number of sessions attended and long-term outcomes is unknown. In a national 5
% sample of Medicare beneficiaries, these investigators identified 30,161 elderly patients who attended at least 1 cardiac rehabilitation session between January 1, 2000, and December 31, 2005. They used a Cox proportional hazards model to estimate the relationship between the number of sessions attended and death and myocardial infarction (MI) at 4 years. The cumulative number of sessions was a time-dependent co-variate. After adjustment for demographical characteristics, co-morbid conditions, and subsequent hospitalization, patients who attended 36 sessions had a 14 % lower risk of death (hazard ratio [HR], 0.86; 95 % confidence interval [CI]: 0.77 to 0.97) and a 12 % lower risk of MI (HR, 0.88; 95 % CI: 0.83 to 0.93) than those who attended 24 sessions; a 22 % lower risk of death (HR, 0.78; 95 % CI: 0.71 to 0.87) and a 23 % lower risk of MI (HR, 0.77; 95 % CI: 0.69 to 0.87) than those who attended 12 sessions; and a 47 % lower risk of death (HR, 0.53; 95 % CI: 0.48 to 0.59) and a 31 % lower risk of MI (HR, 0.69; 95 % CI: 0.58 to 0.81) than those who attended 1 session. The authors concluded that among Medicare beneficiaries, a strong dose-response relationship existed between the number of cardiac rehabilitation sessions and long-term outcomes. Attending all 36 sessions reimbursed by Medicare was associated with lower risks of death and MI at 4 years compared with attending fewer sessions.

Prior and colleagues (2011) tested feasibility and effectiveness of 6-month outpatient comprehensive cardiac rehabilitation (CCR) for secondary prevention after transient ischemic attack or mild, non-disabling stroke. Consecutive consenting subjects having sustained a transient ischemic attack or mild, non-disabling stroke within the previous 12 months (mean of 11.5 weeks; event-to-CCR entry) with greater than or equal to 1 vascular risk factor, were recruited from a stroke prevention clinic providing usual care. These researchers measured 6-month CCR outcomes following a prospective cohort design. Of 110 subjects recruited from January 2005 to April 2006, 100 subjects (mean age of 64.9 years; 46 women) entered and 80 subjects completed CCR. These investigators obtained favorable, significant intake-to-exit changes in: aerobic capacity (+31.4 %; p < 0.001), total cholesterol (-0.30 mmol/L; p = 0.008), total cholesterol/high-density lipoprotein (-11.6 %; p < 0.001), triglycerides (-0.27 mmol/L; p = 0.003), waist circumference (-2.44 cm; p < 0.001), body mass index (-0.53 kg/m(2); p = 0.003), and body weight (-1.43 kg; p = 0.001). Low-density lipoprotein (-0.24 mmol/L), high-density lipoprotein (+0.06 mmol/L), systolic (-3.21 mm Hg) and diastolic (-2.34 mm Hg) blood pressure changed favorably, but non-significantly. A significant shift toward non-smoking occurred (p = 0.008). Compared with intake, 11 more individuals (25.6 % increase) finished CCR in the lowest-mortality risk category of the Duke Treadmill Score (p < 0.001). The authors concluded that CCR is feasible and effective for secondary prevention after transient ischemic attack or mild, non-disabling stroke, offering a promising model for vascular protection across chronic disease entities. The authors stated that they know of no similar previous investigation, and are now conducting a randomized trial.

Pack et al (2013) noted that outpatient CR decreases mortality rates but is under-utilized. Current median time from hospital discharge to enrollment is 35 days. These researchers hypothesized that an appointment within 10 days would improve attendance at CR orientation. At hospital discharge, 148 patients with a non-surgical qualifying diagnosis for CR were randomized to receive a CR orientation appointment either within 10 days (early) or at 35 days (standard). The primary end-point was attendance at CR orientation. Secondary outcome
measures were attendance at greater than or equal to 1 exercise session, the total number of exercise sessions attended, completion of CR, and change in exercise training work-load while in CR. Average age was 60 ± 12 years; 56 % of participants were male and 49 % were black, with balanced baseline characteristics between groups. Median time (95 % CI) to orientation was 8.5 (7 to 13) versus 42 (35 to NA [not applicable]) days for the early and standard appointment groups, respectively (p < 0.001). Attendance rates at the orientation session were 77 % (57/74) versus 59% (44/74) in the early and standard appointment groups, respectively, which demonstrated a significant 18 % absolute and 56 % relative improvement (relative risk, 1.56; 95 % CI: 1.03 to 2.37; p = 0.022). The number needed to treat was 5.7. There was no difference (p > 0.05) in any of the secondary outcome measures, but statistical power for these end points was low. Safety analysis demonstrated no difference between groups in CR-related adverse events. The authors concluded that early appointments for CR significantly improved attendance at orientation. This simple technique could potentially increase initial CR participation nationwide.

In a retrospective cohort study, Beauchamp et al (2013) examined if attendance at CR independently predicts all-cause mortality over 14 years and whether there is a dose-response relationship between the proportion of CR sessions attended and long-term mortality. The sample comprised 544 men and women eligible for CR following MI, coronary artery bypass surgery or percutaneous interventions. Participants were tracked 4 months after hospital discharge to ascertain CR attendance status. Main outcome measure was all-cause mortality at 14 years ascertained through linkage to the Australian National Death Index. In total, 281 (52 %) men and women attended at least 1 CR session. There were few significant differences between non-attenders and attenders. After adjustment for age, sex, diagnosis, employment, diabetes and family history, the mortality risk for non-attenders was 58 % greater than for attenders (HR = 1.58, 95 % CI: 1.16 to 2.15). Participants who attended less than 25 % of sessions had a mortality risk more than twice that of participants attending greater than or equal to 75 % of sessions (OR = 2.57, 95 % CI: 1.04 to 6.38). This association was attenuated after adjusting for current smoking (OR = 2.06, 95 % CI: 0.80 to 5.29). The authors concluded that this study provided further evidence for the long-term benefits of CR in a contemporary, heterogeneous population. While a dose-response relationship may exist between the number of sessions attended and long-term mortality, this relationship does not occur independently of smoking differences. They stated that CR practitioners should encourage smokers to attend CR and provide support for smoking cessation.

The Centers for Medicare & Medicaid Services (CMS, 2014) has determined that the evidence is sufficient to expand coverage for cardiac rehabilitation services to beneficiaries with stable, chronic heart failure defined as patients with left ventricular ejection fraction of 35 % or less and New York Heart Association (NYHA) class II to IV symptoms despite being on optimal heart failure therapy for at least 6 weeks. Stable patients are defined as patients who have not had recent (less than or equal to 6 weeks) or planned (less than or equal to 6 months) major cardiovascular hospitalizations or procedures.

Shibata et al (2012) stated that recent studies have suggested the presence of cardiac atrophy as a key component of the pathogenesis of the postural orthostatic
tachycardia syndrome (POTS), similar to physical deconditioning. It has also been shown that exercise intolerance is associated with a reduced stroke volume (SV) in POTS, and that the high heart rate observed at rest and during exercise in these patients is due to this low SV. These researchers tested the hypotheses that (i) circulatory control during exercise is normal in POTS; and (ii) that physical “reconditioning” with exercise training improves exercise performance in patients with POTS. A total of 19 (18 women) POTS patients completed a 3 month training program. Cardiovascular responses during maximal exercise testing were assessed in the upright position before and after training. Resting left ventricular diastolic function was evaluated by Doppler echocardiography. Results were compared with those of 10 well-matched healthy sedentary controls. A lower SV resulted in a higher heart rate in POTS at any given oxygen uptake ($V(O_2)$) during exercise while the cardiac output ($Q(c)$)-$V(O_2)$ relationship was normal. $V(O_{2peak})$ was lower in POTS than controls ($26.1 \pm 1.0$ (SEM) versus $36.3 \pm 0.9$ ml kg$^{-1}$ min$^{-1}$; $p < 0.001$) due to a lower peak SV ($65 \pm 3$ versus $80 \pm 5$ ml; $p = 0.009$). $V(O_{2peak})$ increased by 11 % ($p < 0.001$) due to increased peak SV ($p = 0.021$) and was proportional to total blood volume. Peak heart rate was similar, but heart rate recovery from exercise was faster after training than before training ($p = 0.036$ for training and 0.009 for interaction). Resting diastolic function was mostly normal in POTS before training, though diastolic suction was impaired ($p = 0.023$). There were no changes in any Doppler index after training. The authors concluded that these results suggested that short-term exercise training improves physical fitness and cardiovascular responses during exercise in patients with POTS.

Benarroch (2012) noted that management of POTS includes avoidance of precipitating factors, volume expansion, physical counter-maneuvers, exercise training, pharmacotherapy (fludrocortisone, midodrine, beta-blockers, and/or pyridostigmine), and behavioral-cognitive therapy.

Although it can be argued that a structured exercise program for physical reconditioning may be beneficial for patients with POTS, it is unclear there is a need for a supervised cardiac rehabilitation program. Furthermore, an UpToDate review on “Postural tachycardia syndrome” (Freeman and Kaufman, 2014) does not mention cardiac rehabilitation as a management tool.

Appendix

Note on Exit Criteria

The following clinical exit criteria have been identified as acceptable (CMS, 1989):

- Symptoms of angina or dyspnea are stable at the patients maximum exercise level; and
- The patient has achieved a stable level of exercise tolerance without ischemia or dysrhythmia; and
- The patient's resting blood pressure and heart rate are within normal limits; and
- The stress test is not positive during exercise (A positive stress test in this context implies an ECG with a junctional depression of 2 mm or more associated with slowly rising, horizontal, or down sloping ST segment).
CPT Codes / HCPCS Codes / ICD-9 Codes

CPT codes covered if selection criteria are met:

93798  Physician services for outpatient cardiac rehabilitation; with continuous ECG monitoring (per session)

CPT codes not covered for indications listed in the CPB:

93797  Physician services for outpatient cardiac rehabilitation; without continuous ECG monitoring (per session)

Other CPT codes related to the CPB:

93015-93024  Cardiovascular stress test using maximal or submaximal treadmill or bicycle exercise, continuous electrocardiographic monitoring, and/or pharmacological stress; with physician supervision, with interpretation and report, or physician supervision only, without interpretation and report, or tracing only, without interpretation and report, or interpretation and report only

93451-93454  Cardiac catheterization

HCPCS codes covered if selection criteria are met:

G0422  Intensive cardiac rehabilitation; with or without continuous ECG monitoring with exercise, per session

S9472  Cardiac rehabilitation program, non-physician provider, per diem

HCPCS codes not covered for indications listed in the CPB:

G0423  Intensive cardiac rehabilitation; with or without continuous ECG monitoring; without exercise, per session

Other HCPCS codes related to the CPB:

S9449  Weight management classes, non-physician provider, per session

S9451  Exercise classes, non-physician provider, per session

S9452  Nutrition classes, non-physician provider, per session

S9453  Smoking cessation classes, non-physician provider, per session

S9454  Stress management classes, non-physician provider, per session

S9470  Nutritional counseling, dietitian visit
ICD-9 codes covered if selection criteria are met:

392.0  Rheumatic chorea with heart involvement

394 - 397.9  Diseases of mitral valve, diseases of aortic valve, diseases of mitral and aortic valves, and diseases of other endocardial structures

398.91  Rheumatic heart failure (congestive)

402.01  Hypertensive heart disease, malignant, with heart failure

402.11  Hypertensive heart disease, benign, with heart failure

402.91  Hypertensive heart disease, unspecified, with heart failure

404.01  Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified

404.03  Hypertensive heart and chronic kidney disease, malignant, with heart failure and chronic kidney disease stage V or end stage renal disease

404.11  Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified

404.13  Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease stage V or end stage renal disease

404.91  Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I through stage IV, or unspecified

404.93  Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease stage V or end stage renal disease

410.00 - 414.9  Ischemic heart disease

424.0 - 424.3  Mitral valve disorders, aortic valve disorders, tricuspid valve disorders, specified as non-rheumatic, and pulmonary valve disorders

425.0 - 425.9  Cardiomyopathy

427.1  Paroxysmal ventricular tachycardia

427.2  Paroxysmal tachycardia, unspecified

427.41  Ventricular fibrillation
427.42 Ventricular flutter
427.5 Cardiac arrest
428.0 - 428.9 Heart failure
429.4 Functional disturbances following cardiac surgery
V15.1 Surgery to heart and great vessels
V42.1 Organ or tissue replaced by transplant, heart
V42.2 Organ or tissue replaced by transplant, heart valve
V42.6 Organ or tissue replaced by transplant, lung
V43.21 Organ or tissue replaced by other means, heart assist device
V43.22 Organ or tissue replaced by other means, fully implantable artificial heart
V43.3 Organ or tissue replaced by other means, heart valve
V45.81 Aortocoronary bypass status
V45.82 Percutaneous transluminal coronary angioplasty status
V45.89 Other postprocedural status
V57.21 Encounter for occupational therapy
V57.89 Other specified rehabilitation procedure

ICD-9 codes not covered for indications listed in the CPB (not all-inclusive):

V12.54 Personal history of transient ischemic attack [TIA], and cerebral infarction without residual deficits [not covered when used to report secondary prevention after transient ischemic attack or mild, non-disabling stroke]

The above policy is based on the following references:

2. Thompson DR, De Bono DP. How valuable is cardiac rehabilitation and who should get it? Heart. 1999;82(5):545-546.


72. American Association of Cardiovascular and Pulmonary Rehabilitation; American College of Cardiology Foundation; American Heart Association Task Force on Performance Measures (Writing Committee to Develop Clinical Performance Measures for Cardiac Rehabilitation), Thomas RJ, King M, Lui K, et al. AACVPR/ACCF/AHA 2010 Update: Performance Measures on Cardiac Rehabilitation for Referral to Cardiac Rehabilitation / Secondary Prevention Services Endorsed by the American College of Chest Physicians, the American College of Sports Medicine, the American Physical Therapy Association, the Canadian Association of Cardiac Rehabilitation, the Clinical Exercise Physiology Association, the European Association for Cardiovascular Prevention and Rehabilitation, the Inter-American Heart Foundation, the National Association of Clinical Nurse Specialists, the Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons. J Am Coll Cardiol. 2010;56(14):1159-1167.


