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A newsletter from the BayCare Cardiovascular Service Line

Benefits of Cardiac Rehabilitation

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Heart disease remains the leading cause of mortality and morbidity in the United States, resulting in more than 610,000 deaths annually. It's estimated that someone has a heart attack in the U.S. every 42 seconds. Over $207 billion is spent each year for health care services and medications for the management of heart disease.

Cardiac rehabilitation is a comprehensive secondary prevention program that developed as an important component of care following the hospitalization of patients with cardiovascular disease. A structured cardiac rehabilitation program is indicated and approved by Medicare for a wide variety of diagnoses to include unstable angina, status post myocardial infarction, status post percutaneous coronary intervention, status post bypass surgery, status post valve repair or replacement, status post heart transplant as well as congestive heart failure.

There are three phases to a traditional cardiac rehabilitation program: Initial inpatient assessment of the patient's physical aptitude following an acute cardiac event with aim to minimize restriction to bed rest; evaluation and assessment post discharge, which includes 24 to 36 sessions of ECG-monitored exercise, which takes place in an outpatient rehabilitation facility. This second phase aims to simulate the metabolic expense of daily activities. In the third phase, the patient is given a prescription for a home program to continue at a local fitness center, engaging in exercise at a greater intensity level.

Strong evidence supports the benefits of patient participation in an approved program. Studies have shown the following:

1. Reduced all-cause mortality ranging from 12 to 24 percent
2. Reduced cardiac mortality from 26 to 31 percent
3. Reduced readmission rates to hospital
4. A strong dose-response relationship between number of CR sessions and long-term outcomes
5. Improved adherence with preventive medications
6. Improved function and exercise capacity
7. Improved mood and quality of life
8. Improved modifiable risk factors

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Upcoming Conference

Save the date for a free cardiovascular conference.

Saturday, October 21
Renaissance Tampa International Plaza | Tampa
Stay tuned for more information in the coming weeks.

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A number of factors may contribute to the benefit of exercise rehabilitation. Well-described effects include improvement in the lipid profile, a reduction in blood pressure, and treatment and prevention of type 2 diabetes. There's a reduction in inflammation, as manifested by a decrease in serum C-reactive protein concentration that's independent of weight loss and other medical therapies, and possibly ischemic preconditioning. Exercise is also associated with improved endothelial function and a more favorable fibrinolytic balance. Exercise training has beneficial hemodynamic effects in patients following MI, including a lower heart rate and blood pressure for a given level of exertion and improvement in aerobic capacity averaging 20 percent. Resistance (strength) training, when superimposed on aerobic training, improves skeletal muscle strength and endurance. More important are reductions in both mortality and recurrent MI.

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A number of studies have documented the safety of cardiac rehabilitation in supervised programs; many antedated current beneficial medical and revascularization therapies. In a more contemporary study of over 25,000 patients enrolled in 65 cardiac rehabilitation centers in 2003, there was one cardiac event for every 8,484 exercise tests performed, one cardiac event for every 50,000 patient hours of exercise training, and 1.3 cardiac arrests for every million patient hours of exercise.

Despite these benefits and minimal safety risks, the majority of Americans eligible for a cardiac rehabilitation program are not receiving it. It's estimated that only about 30 percent of patients receive cardiac rehabilitation post surgery, and only 15 percent participate following a heart attack.

Cardiac rehabilitation participation rates were the recent subject of both an American Heart Association Presidential Advisory and a Scientific Advisory and remains an ongoing national Performance Measure priority for improvement.

There are many barriers to participation, including lack of physician recommendation, lack of insurance, lack of patient motivation, socioeconomic obstacles, lack of transportation, dependent spouse at home and the lack of recognition of benefits.

Every cardiac rehabilitation patient is given an individualized treatment plan. It's essential to obtain an initial comprehensive and accurate evaluation, which includes obtaining a thorough history, body composition analysis, cardiopulmonary aptitude and musculoskeletal strength and flexibility assessment. Based on these findings, an exercise plan is developed that's best suited to the patient's needs.

Although aerobic and strength training represent a critical component of a rehabilitation program, another key element is education. Patients learn the importance of adhering to medications, receive nutritional counseling and planning, are given advice regarding stress and anxiety management, and receive psychosocial support. Cardiac rehabilitation is done in a group setting to allow for a group dynamic of information sharing and support.

For those patients with heart disease who have suffered an acute myocardial infarction, or who have undergone cardiac surgery, or angioplasty/stent procedures, the message still has not been effectively delivered about the tremendous physical and psychosocial benefits of a cardiac rehabilitation program. In this era of shared decision-making between patients and doctors, it's important for physicians to be proactive and support patient participation in an approved cardiac rehabilitation program.

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Evidence-Based Exercise Training and Cardiac Rehabilitation for Heart Failure

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As the population ages and people continue to live longer, it's estimated that the number of individuals suffering from heart failure will also continue to rise. By 2030, an estimated eight million Americans will carry a diagnosis of heart failure and the cost to the country will be more than $53 billion.[1] Heart failure has been the single most expensive condition for CMS for many years (table 1).

Evidence-Based Intervention

HF-ACTION is an NHLBI-funded, multicenter, randomized controlled trial of medically stable patients with LVEF ≤ 35 percent and NYHA class II-IV, despite optimal therapy that was published in 2009.[3] The trial enrolled 2,331 patients and the primary outcome was a composite of all-cause mortality or all-cause hospitalization. The median age of participants was relatively young at age 59, however the degree of left ventricular

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Table 1. Medicare Heart Failure Impact[2]
The 11 percent of Medicare beneficiaries with a diagnosis of heart failure account for:

- 39 percent of beneficiary mortality
- 34 percent of total Medicare spending
- 42 percent of acute hospital admissions
- 55 percent of acute hospital readmissions
- 49 percent of skilled nursing facility admissions

Table 2. Centers for Medicare & Medicaid Services (CMS)[7]
Expanded coverage for cardiac rehabilitation services under 42 C.F.R. § 410.49(b)(1)(vii) for patients with:

- Chronic heart failure
- Left ventricular ejection fraction of 35 percent or less
- New York Heart Association (NYHA) class II to IV symptoms
- On optimal heart failure therapy for at least six weeks (i.e. stable regimen)
- No hospitalization in past six weeks (i.e. clinically stable)
- No plans for major cardiovascular procedures within the next six months

dysfunction was substantial with a median ejection fraction of 25 percent. Patients were followed for up to four years. Key results showed that after adjustment, exercise training was associated with modest significant reductions for both all-cause mortality or hospitalization, and cardiovascular mortality or heart failure hospitalization. When adjusted for coronary disease risk factors, the trial showed a statistically significant 11 percent reduction in all-cause mortality, cardiovascular disease mortality, or hospitalizations in the exercise-training group. For cardiovascular mortality or HF hospitalization, the amount of exercise achieved was a significant predictor of outcome, although even modest exercise of three to five METs per session and five to seven METs per week were associated with important reductions in subsequent cardiovascular risk.[4]

The relatively younger age of HF-ACTION participants is a valid criticism regarding broader applicability of results to our older, frailer patients. However, a comprehensive Cochran database review determined that not only was there no signal for harm related to exercise, there was indeed evidence of reduction in heart failure-related hospital admissions and improvements in patients' health-related quality of life.[5]

The AHA/ACC guidelines subsequently issued fairly strong recommendations for the use of exercise training in heart failure patients to improve functional status (Class I. Level of Evidence: A) and for use of cardiac rehabilitation in clinically stable patients to improve functional capacity, exercise duration, quality of life and mortality (Class IIA. Level of Evidence: B).[6]

Summary

Based on the available evidence, CMS has rightfully added chronic systolic heart failure to the list of approved indications for cardiac rehabilitation. Patients enrolled in accredited cardiac rehabilitation programs can expect to enjoy the benefits observed in clinical trials including improved behavioral risk profile (better diet, less tobacco use), improved CHF symptoms, decreased mortality and reduced hospitalization.

Unfortunately, the current eligibility criteria (table 2) denies these benefits to more than half the heart failure population who have diastolic heart failure or heart failure with preserved ejection fraction. Nevertheless, by applying the guideline recommendations to those who are currently eligible, substantial gains can still be achieved in improved patient outcome and cost reduction while we await data that supports extending the tremendous benefits to all CHF patients.

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The following BayCare hospitals have cardiac rehabilitation programs:

Mease Countryside Hospital
Morton Plant Hospital
Morton Plant North Bay Hospital
St. Anthony's Hospital
St. Joseph's Hospital
South Florida Baptist Hospital
Winter Haven Hospital

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