

ARKANSAS HEART HOSPITAL®

Cardiac Prehabilitation

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What is Prehabilitation?

"The process of enhancing an individual's functional capacity to enable them to withstand a forthcoming stressful event."



What are the main take home points?

- This idea is cutting edge!
- There are no centers currently in the US
- There is not much data on this so we are going to create our own data from our experience
- People wait months for these surgeries in Europe and Canada, we are proposing waiting a few extra weeks
- Intuitively it makes since that the stronger a person is the better they will do with heart surgery
- These are stable patients. Critical disease and unstable patients are not eligible
- These disease processes progress over years
- It didn't happen overnight so it doesn't have to be fixed overnight!



Why are we interested?

- To decreased the risk of post operative complications as well as reduce length of hospital stay and recovery time
- Significant data substantiates the relationship between cardiovascular fitness and perioperative results following many different types of surgery
- Cardiorespiratory fitness has been confirmed as a predictor of mortality and hospital length of stay following major elective surgery in older adults



Why are we interested?

- Psychological distress has been verified as a predictor of poor recovery from cardiac surgery
- Multicomponent prehabilitation is being introduced as an intervention method to reduce anxiety and depression, and increase cardiorespiratory fitness in order to improve post-surgical outcomes



What are some factors that contribute to good perioperative outcomes?

- Physical Conditioning
- Nutritional Status
- Smoking
- Psychological Health
- Comorbidities



Who needs Prehabilitation?

- 1 Very fit- robust, active, energetic, well motivated and fit; these people commonly exercise regularly and are in the most fit group for their age.
- 2 Well without active disease, but less fit than people in category 1.
- Well, with treated comorbid disease disease symptoms are well controlled compared with those in category 4.
- 4 Apparently vulnerable although not frankly dependent, these people commonly complain of being "slowed-up" or have disease symptoms.
- 5 Mildly frail with limited dependence on others for instrumental activities of daily living.
- 6 Moderately frail help is needed with both instrumental and non-instrumental activities of daily living.
- 7 Severely frail completely dependent on others for the activities of daily living, or terminally ill.

(Rockwood, K et al. (2005), A global clinical measure of fitness and frailty in elderly people. CMAJ 173(5): 489-95)



Inclusion Criteria

- 1. Males and Females ≥ 18 years
- 2. Patients who will be receiving a Coronary Artery Bypass Graft (CABG) and are qualified as elective surgery.
- 3. Patients who need aortic valve repair or replacement for moderate aortic stenosis or severe regurgitation and are qualified as elective surgery.
- 4. Patients with mitral valve replacement for moderate stenosis or severe regurgitation and are qualified as elective surgery.
- 5. Patients with combined valve procedures and are qualified as elective surgery.



Exclusion Criteria

- 1. Unstable or recent cardiac syndrome
 - a. Severe heart failure
 - b.Critical left main coronary disease
 - c.Arrhythmias
 - d.Congestive Heart Failure
 - e.Acute coronary syndrome
- 2. Severe left ventricular obstructive disease
 - a. Severe aortic or mitral stenosis
 - b.Dynamic LV outflow obstruction
- 3. Exercise Induced ventricular arrhythmias or recent hospitalization for arrhythmias
- 4. Cognitive deficits that would preclude rehabilitation
- 5. Patients with physical limitations that would preclude cardiac prehabilitation
- 6. Patients who are unable to attend the program



Prehabilitation Team

- 1. Patient's Cardiologist
- 2. Patient's Cardiovascular Surgeon
- 3. Intensive Cardiac Prehabilitation Medical Supervisor
- 4. Exercise Physiologist
- 5. Charge Nurse
- 6. Registered Dietician
- 7. Psychologist
- 8. ECG Technician
- 9. Respiratory Therapist
- 10. Physical Therapist
- 11. Tobacco and Alcohol Treatment Specialist
- 12. Diabetes Educator



Is it safe?

- There is not much data on Cardiac Prehabilitation. There are no programs currently in the US
- Prehabilitation is being successfully utilized in the fields of Orthopedics and Oncology
- In a 2009 Study Furze et al followed 204 patients referred for CABG. There was no statistically significant increase in major adverse cardiac events in the Prehabilitiation group.
- Patient's will be carefully monitored during therapy
- Effective protocols are already in place for our Strong Hearts Cardiac Rehabilitation program
- Have to weigh in the risks of undergoing surgery in a frail state



What does Prehabilitation Include?

- Nutrition education
- Psychological well-being
- Respiratory therapy
- Physical therapy
- Diabetes education
- Tobacco and alcohol cessation



What are the goals of the program?

- 1.Increase tolerance for surgery.
 - a. Decrease post-operative complications.
 - b.Decrease post-operative length of hospitalization.
 - c.Decrease recovery time in hospital and at home.
- 2. Decrease vulnerabilities to psychological stressors.
 - a.Decrease anxiety.
 - b.Decrease depression
- 3. Decrease deconditioning and frailty.
 - a.Increase exercise capacity.
 - b.Increase self-managed physical activity behavior.
 - c.Increase activities of daily living and health related quality of life.
- 4. Reduce CVD risk factors.
- 5.Increase post-operative participation in Cardiac Rehabilitation.



Why should I refer my patient's for this program?

- •Our goal is the overall health and well being of the patient, not just the individual cardiac condition
- Many of these patients are likely to be or have already been turned down for surgery at other institutions



Case Example

- 83 year old female
- 5'2" tall and 100 lbs
- Non Obstructive Coronary Artery Disease
- Atrial Fibrillation
- Severe MR/TR/AI with normal LVEF
- Pulmonary HTN
- Complained to dyspnea with minimal exertion
- Turned down for surgery based on being too frail
- Enrolled in our 8 week program
- Went from dyspnea with minimal exertion to dyspnea only with moderate exertion
- Now able to perform ADLs and get around her house with no symptoms
- No longer wanted surgery as she felt so much better



Success Story





Updates Since Last Year

- No adverse Outcomes
- Patients who would have otherwise been turned down for surgery completed the program and underwent successful surgery
- Growth has been slower than we would like as this is a major culture change but we are still confident in the benefits of exercise
- We have expanded the program to include several different conditions beyond being too frail for heart surgery



Areas of Expansion

PRE-SURGERY: Any surgery in which an individual would benefit from strengthening his or her cardiovascular system.

OTHER CARDIAC CONDITIONS NOT ALREADY COVERED IN CARDIAC REHABILITATION

PULMONARY DISEASES

ENDOCRINE AND METABOLIC DISORDERS

CANCER

FRAILTY















Conditions Improved by Exercise

- Heart Disease
- Hypertension
- Diabetes
- High Cholesterol
- Depression
- Anxiety
- Chronic Pain
- Fibromyalgia
- Asthma
- Sarcopenia
- Surgical Outcomes



EXERCISE RECOMMENDATIONS



life is why-

For Overall Cardiovascular Health:

 At least 30 minutes of moderate-intensity aerobic activity at least 5 days per week for a total of 150

OR

 At least 25 minutes of vigorous aerobic activity at least 3 days per week for a total of 75 minutes; or a combination of moderate- and vigorous-intensity aerobic activity

AND

 Moderate- to high-intensity muscle-strengthening activity at least 2 days per week for additional health benefits.

For Lowering Blood Pressure and Cholesterol

 An average 40 minutes of moderate- to vigorous-intensity aerobic activity 3 or 4 times per week



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