

# PULSE

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## HEART DISEASE



**GODREJ  
MEMORIAL  
HOSPITAL**

COMPASSIONATE CARE FOR ALL  
( NABH & NABL Accredited)

### Cardiology Conundrum..... Back to Basics

"If we can reach populations in developing countries & help them understand the value of their indigenous diet & lifestyle rather than copying ours, Perhaps we can reverse the exponential rise in cardiovascular disease that is plaguing them." - Dean Ornish

Life in the present era has changed & is constantly changing compared to the past. The changes are rapid & 'breath-taking' – in more ways than one. The Good & The Bad usually travel together & therefore most things in life are a mixed bag. Keeping up & copying with changes / Joneses – creates 'Lifestyle'. How much of 'Life' & how much of 'Style' will vary from individual to individual.

All these, unless handled properly, ultimately take its toll – in terms of health, relationships, emotions & psychology. The price for the 'tangibles' is often paid by the 'intangibles' – the 'intangibles' which have often been gifted to us for free. We do not pay anything for them – but we realise its value / worth when we lose it & then pay a 'price' to restore / repair it.

If all the health consciousness shown by people after an illness / treatment was practised from the early days of life many would not have had to face the tragedy at all .

Hence "..... simplify, simplify."

- Henry David Thoreau

- Dr. Kanishka Kapasi  
MBBS,DGO,MD

#### **What are heart diseases?**

Any condition that affects the various parts of the heart belong to this group of illnesses. They may be congenital(present since birth) or acquired (develops later on in life). The acquired heart diseases can be broadly classified into the following

- 1) Coronary artery disease
- 2) Valvular heart disease
- 3) Myocardial diseases and Cardiomyopathies.
- 4) Diseases of the conduction system (Arrhythmias).
- 5) Combination of above.

#### **What is heart attack?**

Heart attack occurs when blood clot forms and adheres to the internal lining of the coronary arteries(supplying blood to heart itself) and completely occludes the vessel and results in damage to the muscle supplied by that vessel.

#### **Consequences of heart attack?**

Heart attack can have disastrous consequences including death, heart failure and fatal arrhythmias.

### **What are the symptoms of heart attack?**

Severe pain in the centre of the chest(it maybe heaviness, burning, chocking) often going up to involve either/or jaw, left arm, shoulder blades or back, which lasts for more than 30 mins and is not relieved by rest. However at the onset of above symptoms it is important to take the patient to the hospital as soon as possible and not wait for the 30 mins to elapse.

### **How do you treat heart attack?**

Time is vital, so it is imperative to take the patient to the hospital as soon as possible to diagnose and treat this fatal albeit curable disease. The most important to achieve flow in the artery which is occluded. This is possible by any of the two means:

- 1) Thrombolysis: Administration of blood clot removing injections.
- 2) Emergency angioplasty: mechanically removing the blood clot and achieving an open artery (PAMI – primary angioplasty in acute Myocardial infarction).

### **Precautions after a heart attack?**

After a heart attack it is important to allow the heart to heal completely and hence its important to take as much rest as possible. The treating doctor will either personally or with the help of cardiac rehabilitation expert provide you with a graduated exercise regimen which needs to be adhered to strictly. The doctor will be putting you on several medications (including DAPT- 2 blood thinning tablets) which should not be discontinued without speaking to your doctor. If treated early and if the heart function is preserved you will be able to resume all your routine activities in the next 6 to 8 weeks.

**-Dr. Amit Sanghvi**  
MBBS,MD,DM (Cardiology)

## **CARDIAC REHABILITATION**

Cardiac rehabilitation services are comprehensive, long term programs designed to limit the patho-physiological and psychological effects of cardiac illness, reduce the risk for sudden death or re-infarction, control cardiac symptoms, stabilize or reverse the atherosclerotic process, and enhance the psychosocial and vocational status of selected patients.

psychological effects of cardiac illness, reduce the risk for sudden death or re-infarction, control cardiac symptoms, stabilize or reverse the atherosclerotic process, and enhance the psychosocial and vocational status of selected patients.

Although exercise training is a core component of the program, current practice guidelines consistently recommend “comprehensive rehabilitation” program that include other components to optimize cardiovascular risk reduction, foster healthy behaviors and compliance to these behaviors, reduce disability, and promote an active lifestyle.

### **Core Components**

The Core Components of Cardiac Rehab program are:

#### **Goals of Cardiac Rehabilitation**

#### **Cardiac Rehab Team**

Delivery of the rehabilitation program requires expertise from a range of different professionals. The team may include:

#### **Cardiac Rehab Facility and Equipment**

A separate air-conditioned exercise room is provided for cardiac rehabilitation. The exercise room is equipped with exercise stations such as

- Telemetry treadmill
- Bicycle ergometer
- Rowing machine
- Bicycle
- Stair climber
- Multigym weights system and/or dumb bells
- Arm ergometer

The rehab center is also equipped with a pulse oximeter, blood pressure monitors, emergency trolley with defibrillator and other cardiac resuscitation equipment.

#### **Cardiac Rehab Services**

Cardiac rehabilitation services are available across a continuum that includes:

- ongoing prevention approaches
- Inpatient
- Outpatient

However, participation in cardiac rehabilitation is not necessarily sequential. People may access services at different stages and entry points

#### **Eligibility for entering the Cardiac Rehab Program**

This can be broadly divided into:

## ● F1: Preventive Management

**For individuals wishing to pursue a healthy lifestyle:**

- Individuals who are in the age group of 25 - 35 yrs.
- who do not have any underlying medical conditions but may be at a risk of developing cardiac symptoms in the future because of their lifestyle
- who would like to enter a cardiac rehab program to maintain a healthy heart

### **Risk assessment for individuals wishing to pursue a healthy lifestyle**

Such people may present with some or all of these factors.

1. Sedentary lifestyle
2. Stress at work
3. Unhealthy eating habits
4. Obesity
5. Smoking
6. Alcohol consumption

### **For Individuals at risk of Coronary Heart Disease**

- Individuals who are over the age group of 35 yrs.
- who have underlying medical conditions such as hypertension and/or diabetes etc. which put them at a risk of developing cardiac symptoms

### **Risk Assessment for individuals wishing to pursue a healthy lifestyle**

Such people may present with some or all of these factors:

1. Sedentary lifestyle
2. Stress at work
3. Unhealthy eating habits
4. Obesity
5. Smoking
6. Diabetes
7. Hypertension
8. Dyslipidemia

### **Rehabilitation Program in Preventive Management**

Individuals may enter the program after thorough evaluation by the physician and after a graded exercise tolerance test.

Program includes:**Education of:**

- a. The basic anatomy and physiology of the heart
- b. Risk factors for heart disease and their modification for ongoing prevention (e.g. smoking cessation, physical activity, healthy eating, control of blood lipids, weight, blood pressure and diabetes)

Lifestyle modification

- a. Counselling to manage stress
- b. Smoking cessation
- c. Nutritional advice by a qualified dietitian

### **Out-Patient Exercise program:**

This program is conducted for around 6-8 weeks with a frequency of 3 sessions per week. All exercises are performed under the supervision of qualified physiotherapists and nursing staff.

Exercise session includes

#### **Warm up**

To prepare the body for exercise by raising the pulse rate in a graduated and safe way.

Warm-up exercises should include marching on the spot, walking, low level cycle followed by stretching of the major muscle groups.

Total duration is 10 min.

#### **Graded Exercises**

Depending on the cardiovascular status and functional capacity patients may adopt an interval or continuous approach to circuit training. Separate stations which include aerobic and resistance exercise stations are set out and participants spend a fixed amount of time at each station before moving onto the next station. Exercise stations include but may not be limited to treadmill, bicycle ergometer, multigym weights system and/or dumbbells, rowing machine, etc.

Total duration is 30 min.



## Cool Down

To bring the body back to its resting state. It incorporates exercises of diminishing intensity and passive stretching of the major muscle groups.

Total duration is 10 min.

## Self-management

Home or community-based physical activity program e.g. walking, swimming, circuit training

## F2: Curative Management

The core group of people eligible for cardiac rehabilitation are those who have had:

- myocardial infarction (ST elevation MI, non-ST elevation MI)
- re-vascularization procedures such as CABG, PTCA, Valve repair/replacement
- stable or unstable angina
- controlled heart failure
- other vascular or heart disease

## Rehabilitation Program in Curative Management

Cardiac Rehabilitation following a cardiac event whether managed conservatively or surgically consists of four phases.

### Phases of Cardiac Rehabilitation

Cardiac rehabilitation typically comprises of four phases. The term phase is used to describe the varying time frames following a cardiac event.

#### Phase I: Inpatient cardiac rehabilitation

Inpatient cardiac rehabilitation begins right after admission to the hospital. Hospital stay usually lasts for 5-7 days. Main elements of inpatient rehabilitation are:

##### Basic information and reassurance:

1. Reassurance and explanation of cardiac condition, treatment and procedures
2. Explanation of the inpatient activity (mobilization) program

##### Supportive Counselling

Individual and family counselling regarding:

1. Daily routine care
2. Diet
3. Identification and modification of risk factors and provision of an individual plan to support lifestyle changes
4. Resumption of physical and daily living activities

#### Early Mobilization Program

The inpatient mobilization program aims for a progressive increase in activity so that the patient can be independent in basic self-care at the time of discharge. The program is carried out over a period of 5-7 days with gradual progression of mobilization. It includes:

POD 1

Chest PT, deep breathing exercises and incentive spirometry General mobility exercises in bed

POD 2

┆Chest PT, deep breathing exercises and incentive spirometry ┆ General mobility exercises in bed

┆Sitting at edge of bed

POD 3

┆Chest PT, deep breathing exercises and incentive spirometry ┆ General mobility exercises in bed ┆ Sitting in chair

POD 4

┆Deep breathing exercises and incentive spirometry ┆ General mobility exercises ┆ Ambulation in ward

POD 5

Deep breathing exercises and incentive spirometry ┆ General mobility exercises ┆ Ambulation in corridor

POD 6

Deep breathing exercises and incentive spirometry ┆ General mobility exercises ┆ Ambulation in corridor

┆ Staircase climbing

#### Discharge planning:

A personal discharge activity program is provided at the time of discharge and the patient is encouraged adhere to this and commence daily walks.

Information regarding phase II and phase III programs is provided to patients and they are encouraged to attend the same.

## **A.Phase II: Post Discharge Period**

This phase begins post discharge and lasts for 4-6 weeks.

During this phase patient is encouraged to resume activities of daily living.

Low intensity exercise regime may commence once stable. This includes a daily walking program and a minimum of 30 minutes of light intensity physical activity on most, or all days of the week. Patient is trained in self-monitoring vital signs during the physical activity.

## **A .Phase III: Outpatient Cardiac Rehabilitation**

This phase typically lasts for 6 weeks with a frequency of 2-3 sessions per week.

Individuals enter the rehabilitation program only after a follow-up visit with the concerned physician. A thorough evaluation and a graded exercise tolerance test is conducted by the physician. The patient then commences the program according to the guidelines provided by the physician.

All exercises are performed under the supervision of qualified physiotherapists and nursing staff.

Exercise session includes

### **Warm up**

To prepare the body for exercise by raising the pulse rate in a graduated and safe way.

Warm-up exercises should include marching on the spot, walking, low level cycle followed by stretching of the major muscle groups.

Total duration is 10 min.

### **Graded Exercises**

Depending on the cardiovascular status and functional capacity patients may adopt an interval or continuous approach to circuit training. Separate stations which include aerobic and resistance exercise stations are set out and participants spend a fixed amount of time at each station before moving onto the next station. Exercise stations include but may not be limited to treadmill, bicycle ergometer, multigym weights system and/or dumb bells, rowing machine, etc. Total duration is 30 min.

### **Cool Down**

To bring the body back to its resting state. It incorporates exercises of diminishing intensity and passive stretching of the major muscle groups.

Total duration is 10 min.

Each patient's progress is reviewed often, and the exercise plan is adjusted as the cardiovascular capacity improves.

At the completion of this phase, stress test is performed to measure overall success.

## **Phase IV: Self-management**

In this phase patients may either continue their exercise regime indefinitely at the rehab center or move on to a home or community-based physical activity program e.g. walking, swimming, circuit training. Patients are encouraged to shoulder responsibility of self- monitoring and record keeping.

The goal of phase four is to facilitate long term maintenance of lifestyle changes, monitoring risk factor changes and secondary prevention.

**Mrs. Radhika Kamat**  
BSC (Physiotherapy)

## **“A healthy diet and lifestyle are your best weapons to fight cardiovascular disease” (CVD)**

Diet can have both a negative and positive impact of CVD risk.

### **❖ Maintain a healthy body weight:**

- Body Mass Index (BMI) and heart diseases are positively related; as the BMI goes up, the risk of heart disease also increases.
- Carrying excess adipose tissues greatly affects the heart through the many factors that are often present: hypertension, glucose intolerance, inflammatory markers (IL-6, TNF-  $\alpha$ , CRP), obstructive sleep apnea, endothelial dysfunction and dyslipidemia)
- Weight distribution (abdominal versus gynoid) is also predictive of heart disease risk, glucose intolerance and deranged serum lipid levels
- International Diabetes Federation (IDF) has defined desirable waist measurement cut offs for Asian men 90cm and women 80cm.



## ❖ Therapeutic Lifestyle Change Dietary Pattern:

### ❖ Saturated and Unsaturated Fatty Acids:

- A high intake of saturated fatty acids can increase plasma LDL cholesterol.
- ❖ The association between LDL Cholesterol and Saturated Fatty Acids to Coronary Artery Disease is very strong.
- 1% increase in SFA consumption equals to 2.7 mg increase in serum cholesterol.
- Examples of fats which have predominantly SFA are butter, ghee, coconut oil and palm oil. Lowered intake of SFA replaced with Polyunsaturated Fatty Acids (PUFA) containing vegetable oil may reduce CAD by 30%.

### ❖ Both Monounsaturated Fatty Acids (MUFA) and PUFA may be used to replace SFA with PUFA having a greater cholesterol lowering effect.

- Examples of fats which have predominantly PUFA are sunflower oil, corn oil. Oils which are high in MUFA are olive oil, canola oil, peanut oil and sesame oil.
- n-3 fatty acids (also known as omega 3 fatty acids), docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) may reduce the risk of Cardiovascular Disease (CVD).
- The best source of DHA and EPA is oily fish and they are also present in smaller quantities in shellfish, red meat and eggs. Foods containing Omega-3 fatty acids are Walnuts, Flax, Fenugreek Seeds and Mustard Seeds, Seer, Katla, Rawas (Indian Salmon), Halwa (Black Pomfret) and Tarle (Sardines).
- Two servings of fatty fish per week or 2 g of fish oil per day can reduce triglycerides by 25% and increase HDL-Cholesterol.

### ❖ Limit Trans Fatty Acids (TFA): The Indian recommendation is stringent, at nil per day (Lipid Association of India, 2016).

- Sources of TFAs are margarine, shortenings, Vanaspati and foods in which they are used such as cakes, cookies, crackers and fried foods.

### ❖ Dietary Cholesterol: It is present only in animal foods and the richest sources are organ meats and egg yolk

### ❖ Salt:

A high intake of salt can increase the risk of hypertension which is a risk factor for heart disease. Reducing salt intake can help to lower blood pressure and therefore reduce the risk of developing CVD.

### ❖ Dietary Fibre:

Fruits and vegetables have always been considered health-promoting foods as they contain fibre, vitamins, minerals and anti-oxidants. Therefore, current dietary guidelines recommend increasing fruits and vegetable intake to  $\geq 5$  servings per day, this can be met with five or more servings of fruits and vegetables and six or more servings of grains including whole grains.

### ❖ Plant Sterols and Sterols:

- Plant sterols and stanols, also called “phytosterols”, are substances that are naturally found in plant foods, including fruits, vegetables and vegetable oils, nuts and seeds.
- They work by preventing the body from absorbing cholesterol in the intestines. This in turn helps to lower blood levels of LDL cholesterol. Studies show that sterols and stanols lower LDL cholesterol levels by an average of 6% and perhaps as much as 14% in as little as four weeks.
- Foods containing plant sterols and sterols are wheat germ, wheat bran, peanuts, vegetable oils (corn, sesame, canola and olive oil), almonds and Brussels sprouts.

**Ms. Jyothi Mallarapu**  
Dietician



**Dr. Milind Ruke** (middle) has been selected and made chairman for international working committee on Amputation Prevention.



**Dr. Amit Bhalotia** (first from left) has been selected for **Dr. C.R. Sujan Gold Medal** in super speciality DNB Plastic Surgery Exams for the year 2016 for being All India topper.



Our Hospital Orthopaedic & Spine Specialist **Dr. Rahul Rane** got Award in Korea for his **Research Paper Presentation**.



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