All you need to know about HEART

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Acknowledgement

This Booklet is Dedicated
to
All My Patients
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METRO HEART INSTITUTE WITH MULTISPECIALTY, FARIDABAD
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The inspiration of writing this book came in my mind considering the fact that heart patients coming to my OPD & hospital are having lots of questions in their mind related to their disease. But it is not possible to know everything during that small conversation.

I felt the need to make a comprehensive information booklet for my patients on frequent issues related to the disease. I tried to touch upon important aspects related to heart disease, various treatment options and after care. To make it interesting to read, I have written in form of “frequently asked questions”. I am sure all of you will find this booklet useful.

Heart disease kills millions of patients in India every year Indians are the most vulnerable race in the world for this serious disease. It remains silently present in our body for several years and causes irreversible damage before we come to know about it. 33% of patients die within 24 hours of heart attacks and 16% die within 1 hour. Therefore prompt recognition of the heart problem and appropriate and urgent treatment is absolutely essential mandatory to save these patients. Impact of heart disease is so devastating that understanding symptoms, prevention and management of heart disease is very important for all of us.

I wish no one should fall sick and believe that prevention is better than cure. Heart disease is an easily preventable disease. Good health is an asset and just a little effort can keep the disease away from you.

At the end I wish all of you a healthy and happy heart.
About the Author

The Author of this book, Dr. Shyam Sunder Bansal is a renowned interventional cardiologist with experience of more than 25 years in the field of heart disease management. He is the managing director of Metro Heart Institute with Multispecialty, Faridabad.

He is the first qualified DM Cardiology of Haryana State. He started the first dedicated heart hospital in the state in 2002.

He is MD (Medicine), DM & DNB (Cardiology) and has been conferred prestigious American fellowships, FACC & FSCAI for his outstanding contribution in the field of cardiology.

He has treated more than 2 lac heart patients so far successfully which also includes foreign patients and has performed more than 30,000 heart procedures including angioplasties, pacemaker, rotablaters, OCT, IVUS, Pressure wire, heart hole closure without surgery etc. With his mission of providing international standard treatment at most affordable cost and vision of providing all health care solutions under one roof, he started Metro Hospital, Faridabad which is a multispecialty hospital with 400 beds.

He is a pioneer in introducing several procedures for the first time in North India. His special area of interest is complex angioplasties of left main coronary artery, chronic total occlusions and bifurcation blocks. He is a pioneer in the country to use crusade, corsair and retrograde techniques for very old hard and difficult to open blocks. He has been honoured by district administration on republic day & conferred Rashtriya Gaurav Award for his distinguished services to humanity. IMA honoured him for highest number of angioplasties in 2011. He was also recipients of entrepreneurs of the year award. Highly talented, extremely dedicated to his work and quality oriented, Dr. S.S. Bansal is a great visionary.
GROSS ANATOMY OF HEART
(Anterior View)
What are the types of Heart diseases? 
Heart diseases or cardio vascular diseases (CVD) are a class of diseases that involve the heart or blood vessels. Common CVD’s include: Ischemic heart disease (IHD), stroke, hypertensive heart disease, rheumatic heart disease (RHD), aortic aneurysms, cardiomyopathy, arrhythmias, atrial fibrillation, congenital heart disease, endocarditis and peripheral artery disease (PAD), among others.

What is IHD or CAD? 
Ischemic heart disease is also called as coronary artery disease. It is the most common type of heart disease. It occurs due to cholesterol deposition in the arteries supplying blood to heart muscle. Coronary artery disease kills millions of people every year in India. It is the number one killer in the world as well. It is associated with high mortality due to heart attack & heart failure associated with this condition.
What are the risk factors for heart disease?

- Physical inactivity
- High blood pressure
- High blood cholesterol (hypercholesterolemia)
- Smoking
- Being overweight or obese
- Having a family history of heart disease, and
- Having diabetes.

“Video Ref: “

High blood pressure: https://www.youtube.com/watch?v=KEYYLB9UACK
Hypertension: https://www.youtube.com/watch?v=azkdXElX6r8
Heart problems: https://www.youtube.com/watch?v=RKyNfE0cXE&t=4s

Other lifestyle factors also play a part. These include drinking too much alcohol and having too much salt. Heart disease can run in families. One hereditary condition which causes coronary heart disease is called familial hyperlipidemia (also called FH or familial hypercholesterolemia). This is an inherited or acquired condition where the level of cholesterol in the blood is very high and these patients are at a high risk for heart disease.

What is the meaning of heart attack?
Your heart is a powerful muscular pump that drives blood
around your body. To keep your heart healthy, the muscles of your heart need to get a supply of oxygen-containing blood from the coronary arteries. If one of the coronary arteries becomes blocked—for example by a blood clot, part of your heart may be starved of oxygen and may become permanently damaged. This is what happens if you have a heart attack.

**What is unstable & stable angina?**

Angina is the symptom you get when the coronary arteries become narrowed by Atheroma (block of cholesterol, the bad fat) and as a result the heart muscle is not getting a good blood supply and this causes ischemic pain. Angina is chest pain or discomfort in the chest due to in-adequate blood supply.

Stable angina is angina that predictably comes with a particular amount of exercise or stress, and is well controlled with drugs.

Unstable angina is angina that has just developed for the first time, or angina which previously was stable but has recently got worse or changed in pattern or angina at rest. For example, with unstable angina your pain may come after an unpredictable amount of exercise or unstable angina can happen very suddenly and make you feel very unwell.
What’s the difference between a heart attack and unstable angina?
- A heart attack means that your heart muscle has been starved of oxygen and has been or is being damaged or dead.
- Unstable Angina means that, although your heart muscle is not getting an adequate blood supply but your heart muscle is not being damaged.

“Video Ref. :”
- Silent Hearth Attack : https://www.youtube.com/watch?v=OTj4fBI0x-E
- Heart diseases in men and women - CNN-IBN : https://www.youtube.com/watch?v=ESawIEXnJl8
- Facts about heart attack : https://www.youtube.com/watch?v=fPuEz2Qkv4
- Medicines to avoid heart problems : https://www.youtube.com/watch?v=x0D80KnI4fy0
What are the symptoms of heart attack?
A heart attack can range from mild chest discomfort to severe pain in the centre of the chest. The pain or discomfort caused by a heart attack can last more than 20 minutes. The pain often feels like a heaviness or tightness which may also spread to the arms, neck, jaw, back or stomach or it may affect only the neck, lower jaw or stomach. Someone who is having a heart attack may also sweat, feel light-headed, feel sick or be short of breath. In some cases people have mistaken the pain for gas or indigestion. A heart attack may also cause the disturbance of the heart beat which may become dangerously slow or fast.

![Location of chest pain during angina or heart attack](image)

However, sometimes a heart attack is “silent” and produces little discomfort. You may not even know that you have had one until you have a medical test for something else later on or a routine medical examination which reveals that you have had a heart attack. A heart attack is also called **Myocardial Infarction**.
What do you mean by acute Coronary Syndrome?
When someone has a persistent chest pain or chest discomfort which seems to be coming from the heart it is sometimes difficult for the doctors and nurses to tell whether the person is having a heart attack or an episode of unstable angina. If this happens, your doctor may tell you that you have “Acute Coronary Syndrome”. Syndrome means a set of symptoms that occur together, and “coronary” means something to do with the coronary arteries.

So, Acute Coronary Syndrome is a general term that describes a heart attack or unstable angina.

What brings on acute coronary syndrome?
Acute coronary syndrome- a heart attack or an episode of unstable angina- can happen to some people who seems to have been perfectly well in the past. In other people, it may follow weeks, months or years of stable angina. In many cases, a heart attack happens when a person’s pattern of angina has recently changed from stable angina to unstable angina. (this is why, if the pattern of your angina changes in any way, you should tell your doctor about it immediately, as you may need to go and stay in the hospital for a while).
A heart attack can start at any time of the day or night, either when you have been resting or are being active. Occasionally a heart attack can be brought on by doing energetic activity which you are not used to, or by intense physical or emotional stress like vigorous exercise, going uphill, running or playing sports like tennis or football etc.

Heart attacks or episodes of unstable angina are usually the result of a process that has been going on for many years. The coronary arteries deliver oxygen-rich blood to the heart muscle. The inside of the coronary arteries can become narrowed by a gradual build-up of fatty material within their walls called plaque.

This process is called “Atherosclerosis”. With time, the artery can become so narrow that it cannot deliver enough oxygen-containing blood to the heart muscle when its demands are high – such as when you are doing exercise. This disease is called “Coronary Heart Disease” or coronary artery disease. People with coronary heart disease are at risk of having a heart attack or angina.

If the inside lining of the narrowed arteries cracks, blood cells called “platelets” may become attached to the damaged areas. A blood clot may form over the cracks. Within just a few minutes this can make the artery even narrower and can quickly block off the artery completely. If the artery is blocked for more than a few minutes, the muscle cells in the area of your heart supplied by that artery may become permanently damaged. This is what can happen when someone has a heart attack.

**What happens to my heart after a heart attack?**

After a heart attack your body will replace the area of the heart muscle that was damaged with fibrous tissue which remains the non functional part of your heart.

Most of the risk to life happens within the first few hours after the heart attack. Risk gets substantially reduced after
receiving proper treatment including drugs and angioplasty. Your future management will depend upon the extent of damage to the heart muscle during the episode of the heart attack.

Many people also worry when the time comes to go home. Away from medical care you may worry about being left alone or about what to do if the pain comes back. This early period at home may also be difficult for partners, who have to strike a balance between “wrapping you up in cotton wool” and allowing you to do too much. Make sure that you understand everything before you go home. Staff will provide you angioplasty/Bypass instructions list with dos & don’ts.

**Is heart disease an irreversible condition?**
Heart disease is potentially reversible by attending the risk factors like cholesterol, blood pressure and smoking. Several studies have shown for example that aggressive lowering of blood cholesterol with LDL levels below 100 can control the progress of block.

**Is heart disease hereditary?**
There is an increase in the risk of heart attack if a first-degree relative (parent or sibling) had a heart attack or stroke. That is mainly seen when the relative had a heart attack before the age of 45 in male and 55 in female. Obviously, you cannot change your family history but a positive history should suggest the need to reduce weight or avoid all the other risk factors like stopping smoking and decreasing cholesterol, controlling BP and sugar and increasing physical activities.

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“Video Ref.:”
- *Congenital heart problems*: [https://www.youtube.com/watch?v=PWGTxyC1V8c](https://www.youtube.com/watch?v=PWGTxyC1V8c)
What tests should be done in case of stable angina / unstable angina / heart attack?

ECG – The doctors and nurses will look for specific changes in your ECG. If ECG shows heart attack, then the risk of death is maximum. However normal ECG cannot rule out presence of a serious block in your artery.

ECHO – Echo is a very important test to perform as early as possible after heart attack / chest pain. It gives you accurate information about the part of the heart damaged due to the attack and also the extent of damage. It also gives you details of any complication of heart attack like Valve leakage, hole in heart or rupture of heart.

BLOOD TESTS – If you have an acute coronary syndrome, the most important blood tests will be cardiac enzyme tests and Troponin tests. These tests can tell whether or not your heart muscle has been damaged and if so how severe that damage is. Muscle damage is indicative of heart attack.
CARDIAC ENZYMES TEST – When heart muscles cells are damaged during heart attack, certain enzymes leak into the blood stream as a result of heart attack. They are proteins & can be detected by blood tests. It is usually possible to detect low levels of these enzymes in the blood. The more severely the heart is damaged during heart attack, the more enzymes are released into the blood stream. The change in levels can be measured from a number of blood samples taken over several days and their levels are consistent with the phases of evolution of heart attack.

The most commonly measured enzymes are called CPK, CPK-MB and troponins. The levels of these enzymes reach gradually a peak between 12 and 24 hours after a heart attack and then comes down.

TROPOinin TEST
This test measures the level of Troponin in the blood. Troponin is another type of protein. This is normally found within the heart muscle cells but not in the blood. If the heart is damaged – for example, by a heart attack – Troponin leaks into the blood where it can be detected within 12 hours, by a simple blood test. Troponin test can tell whether or not the heart muscle is being damaged. Often if you are admitted to hospital with chest pain, the Troponin test can help doctors to decide whether you are having a heart attack or angina or any other non cardiac reason of chest pain.

“Video Ref.:”
• Ultrasound for heart problems :
  https://www.youtube.com/watch?v=jhDuiHytiwY
CT Angiography

This is a OPD based non invasive coronary angiography which gives vital information about your coronaries within no time.

It’s results are comparable to conventional angiography and it requires lesser doses of dye

Who should get CT Angiography done?

- If you have High Blood Sugar or High Blood Pressure
- If you have chest pain or changes in ECG
- If you are post angioplasty or bypass & having symptoms of chest heaviness or breathlessness
- Going in for major surgery other than heart surgery to detect risk of heart attack during or after surgery (in middle or old age)
- If you have family history of heart disease

Note: This test can be done if serum creatinine is normal & heart beating is stable.
What is golden period after heart attack & what is the importance of door to balloon time?

When heart attack occurs, action should ideally be taken within the first hour. Get yourself hospitalised in heart hospital at the earliest because there is some risk of sudden death after heart attack. Once you are inside the hospital door then angioplasty to open blocked artery should ideally be done within 90 minutes that is called as door to balloon time. Very few heart hospitals are able to achieve 90 minutes door to balloon time. We are happy to share that Metro Hospital, Faridabad has consistently maintained door to needle time below 90 minutes to minimize the damage to the heart in most of our patients even at night. We keep one cath lab spare for heart attack victims to prevent delay in opening the artery.

“Video Ref. :”
- Role of rotablator: https://www.youtube.com/watch?v=q02ru5bur3Q
What happens when the ambulance comes and when you first get to the hospital?

Acute coronary syndrome – a heart attack or unstable angina – is treated as an emergency because of the severe pain or discomfort some people may have and the risk to your life if your heart stops pumping effectively. The first priority is treatment to relieve the pain or discomfort. Ambulance staff will give you oxygen. They will also give you an aspirin to chew along with other medicines. Aspirin and other anti-platelet drugs will help to reduce the adverse effect of heart attack on your heart. If the pain is still severe, they will give you some painkillers also.

When you get to the hospital, you will have a rapid assessment. A doctor will assess your symptoms and take your medical history. You will also have:-

a) A general physical examination & measuring of your blood pressure and monitoring of your heart rate.

b) An ECG to help diagnose your condition and

c) Blood test to check for any damage to the heart muscle.

Meanwhile the nurse will give you immediate treatment to relieve your symptoms and reduce the risk of damage to your heart muscle. Treatment may include painkillers (morphine), oxygen, aspirin, other antiplatelets and statins. You may also be given a nitrate drug into a vein to ease any chest pain or discomfort by high blood pressure. If you are diabetic, you may also receive an insulin drip. Next, the doctor will assess your symptoms again and will look at the results of your ECG and blood tests to decide further action.
What is cardiac arrest?
During a heart attack, there may be disturbances in the heart rhythm. The most serious form of this is called “ventricular fibrillation”. This is when the electrical activity of the heart becomes so chaotic that the heart stops pumping and shivers or “fibrillates” instead of rhythmic beating. It can sometimes be corrected by giving an electric shock through the chest wall, using a device called a defibrillator. This is often successful in restoring a normal heartbeat.

If a person has cardiac arrest, the person loses consciousness almost at once. There are also no other signs of life such as breathing. This is an extreme emergency. Unless someone starts cardiopulmonary resuscitation (CPR) within three to four minutes, the person may suffer permanent damage to the brain and other organs. CPR is compression of chest with intermittent mouth to mouth breathing.

Note - There is detailed description of CPR on Last page (Page No. 56)
The treatment you are likely to have once heart attack is established.

1) Thrombolysis

Thrombolysis is a treatment that helps to dissolve the clot that is completely blocking the artery. It involves injecting a thrombolytic drug such as tPA, streptokinase or Urokinase, tenecteplase into the blood stream. Ideally the injection should be given as soon as possible – within one hour of getting the symptoms of the heart attack and at the latest within six hours. You can receive thrombolysis later than this, but it is less effective as time goes by. It should never be given after 24 hours of the heart attack. This is why it is important to go to the hospital as soon as possible (Golden Hour). 50% of patients do not respond to this treatment (Failure to dissolve clot) and 1% can have life threatening bleeding with thrombolysis. Therefore it cannot be given to patients with high risk of bleeding. Most of the patients (80%) will need angioplasty despite thrombolysis. If you have a streptokinase injection, it will be mentioned in your discharge summary because you should not have another dose of the same injection for at least 1 year if it is STK. If you have another heart attack, you will receive a different thrombolytic drug.

"Video Ref. :"
- Pacemakers : https://www.youtube.com/watch?v=MwlxdKjEUGY

2) Coronary Angioplasty.

A coronary angioplasty is a treatment to open up the
narrowed artery. **This is a gold standard treatment for heart attack.** When angioplasty is done as an emergency in case of a heart attack, it is called ‘**Primary Angioplasty**’. The technique is almost the same as a coronary angioplasty which is done as a routine procedure that has been planned earlier. When you have a coronary angioplasty as an emergency, you may be given a drug called Glycoprotein IIb/IIla inhibitors into a vein to reduce the thrombus burden. Aspiration of thrombus is required many times with the help of an aspiration catheter.

If you have a coronary angioplasty, you may be discharged from the hospital about two or three days after having the procedure. 95% of the patients of the heart attack can be saved with timely angioplasty. Moreover if done timely it can minimize the extent of heart muscle damage so that you can have a good quality of life without breathlessness or tiredness due to weak heart muscle there after.

The doctors will also give you a combination of drugs during hospital stay and at discharge:

- Blood thinners
- Nitrates
- Beta – blockers
- ACE Inhibitors

This combination of either thrombolysis or coronary angioplasty and other drugs will help to:

- Dissolve the clot which is completely blocking the artery
- Ease your chest pain, and
- Reduce the risk of ongoing damage to your heart muscle.
What other care and treatment will I have, if admitted in hospital with acute coronary Syndrome?
If you have acute coronary syndrome – a heart attack or unstable angina – you may be cared for in the coronary care unit (CCU) of the hospital.

Further tests
Over the days while you are in the hospital you will have several ECG (Electrocardiograms) to assess your heart rhythm, and several blood tests. A heart monitor will be attached to you so that the nurses can check for any disturbance in your heart rhythm and other vital parameters.

Other tests will be carried out to assess how well your heart is pumping and to help decide on the best form of ongoing treatment. These tests may include:
- A chest X-Ray, Echo Cardiography with color doppler.
- Coronary Angiography / CT Angiography

When the doctor and nurses are confident that you are making good progress, if you have been in the CCU, they will make arrangements for you to transfer to a general medical ward or general cardiac ward. They will also suggest that you gradually start getting up and about again.
What is Angiography?
Angiography or arteriography is a medical imaging technique used to visualize the inside, or lumen of blood vessels of organs of the body, with particular interest in the arteries, veins, and the heart chambers. This is traditionally done by injecting a radio-opaque contrast agent into the blood vessel and imaging using X-ray based techniques such as fluoroscopy.

“Video Ref.”
- Facts about angiography tests:
  https://www.youtube.com/watch?v=km8r4qNJXfc

What is Angioplasty?
Angioplasty, which opens narrowed arteries, is performed by interventional cardiologists. They use a small balloon-tipped catheter that they inflate at the blockage site to flatten the plaque against the artery wall. A thin wire is inserted into an artery and is guided to the site of narrowing in the coronary artery. The catheter is slipped over this guidewire and positioned at the blockage, where the balloon is inflated. After treatment, the wire, catheter, and balloon are removed. The hospital stay and recovery time for this procedure are shorter than that of bypass. Now this procedure is mostly being done through wrist artery (Radial) to make recovery even faster & to reduce the bed time.
WHAT IS ANGIOPLASTY?

This is a minimally invasive procedure that can quickly restore or improve blood flow through blocked arteries.

1. A thin, flexible catheter (tube) with a balloon at its tip is threaded through a blood vessel on a guidewire to the part of the coronary artery where it is narrowed or blocked.

Once in place, the balloon is inflated to stretch the artery. The fatty deposit, which was blocking or narrowing the artery, is compressed against the walls of the artery, restoring blood supply.

2. Often, a fine metallic mesh, called a stent, is used. The stent is stretched open as the balloon inflates, and positioned in that part of the artery which was previously narrowed to help keep the vessel open. The balloon is then removed. If a drug-eluting stent is used, it slowly releases medication to reduce the likelihood that the vessel will narrow again.

Another type of stent, known as the Absorb stent, dissolves slowly over the span of two years, leaving just two pairs of very small platinum markers which remain in the artery. During follow-up checks, these markers enable a doctor to see where the angioplasty was originally carried out.

Video Ref.:
How to know whether you need angioplasty & stenting:
https://www.youtube.com/watch?v=JmLKV52M0YY
What is CABG?
Coronary artery bypass surgery, also known as coronary artery bypass grafting (CABG, pronounced "cabbage") surgery, is a surgical procedure consisting of either diverting the left internal thoracic artery (left internal mammary artery or "LIMA") to the left anterior descending (LAD) branch of the left main coronary artery; or a harvested great saphenous vein of the leg, attaching the proximal end to the aorta or one of its major branches, and the distal end to immediately beyond a partially obstructed coronary artery (the "target vessel") - usually a 50% to 99% obstruction. The purpose is to restore normal blood flow to that partially obstructed coronary artery.

It is performed to relieve angina unsatisfactorily controlled by maximum tolerated anti-ischemic medication, and to reduce the risk of death. This surgery is usually performed on beating heart (off pump) nowadays. Sometimes it necessitates the usage of cardiopulmonary bypass called as "on-pump" surgery.
Angioplasty or Bypass?
If the tests show that one or more of your coronary arteries are severely narrowed and that drug treatment is not likely to be successful, your doctors may advice you to go for:
- Coronary Angioplasty with stent, or
- Coronary Bypass Surgery
On-going drug treatment after procedure

If you have had acute coronary syndrome, your doctor may give you drugs to continue taking after you have been discharged from the hospital. The four main reasons for taking these drugs are:

- To prevent a heart attack (aspirin and other blood thinners, beta blockers and statins)
- To relieve breathlessness and heart failure (diuretics or ACE inhibitors)
- To control risk factors such as high cholesterol levels or high blood pressure (cholesterol-lowering drugs and blood pressure lowering drugs), and
- To treat angina (nitrates, calcium antagonists or beta-blockers).
- To treat abnormal heart beats (Amiodarone)

If you have diabetes, you may be given insulin or tablets to control your blood glucose level.

What if heart attacks are left untreated?

If left untreated one third of victims of heart attack will die within 24 hours and 16% of them will die within first one hour. If heart disease is not treated, it can cause severe angina, heart failure with shortness of breath even on mild activities. The risk of death is increased. Most physicians are now very familiar with treating heart disease so it does not often go untreated.
“Will it happen again?”
Many people wonder if they will have another heart attack. Once the first few days are over, the chance of having a second attack is not great and, as time goes by, it becomes less and less. There is still a risk, but it can be greatly reduced by adopting healthy habits and taking suitable medicines.

Emotional reaction after the event?
Fears and changing emotions are normal after a heart attack. After your heart attack you may feel:
· Frightened that you may have another heart attack.
· Afraid of dying or
· Worried that you won't be able to do as much.

All this is normal and is often associated with changing emotions, such as feeling depressed or bad-tempered. These changing emotions can strain even the closest relationships. But partners may experience feelings of anger or guilt. Bottling up these feelings can lead to resentment and difficulties in the relationship. It is important to talk about these feelings. You can solve many problems by talking about them.

Going home again after the heart attack.
It is always good to get back home after being in the hospital. However, you may feel worried when you leave the carefully monitored environment of the hospital ward. It is best if you have someone with you at home for the first week or two.

You will probably have good days and bad days, this is quite normal. You may feel depressed after returning home. You do
not need to worry too much about this. It is a natural reaction to the stress of a major illness and it is quite common. If the depression continues, talk to your Cardiologist or to one of the staff at the hospital.

What about exercise after the procedure?
It’s natural to feel a bit nervous about exercising after your heart attack. However, the heart is a muscle and, like any other muscle in the body, it needs exercise to keep it in tip-top condition. While you are in the hospital, the medical team, nurse and physiotherapist will advise you about how much, and what type of physical activity is suitable for you.

At the beginning they will advise you to do gentle activity. You will then be asked gradually to increase the intensity of your exercise as you become stronger and more confident.

The advice they give you about physical activity may be different from the advice given to other people with heart attack. This is because everyone is different. Follow the advice carefully. After you have left the hospital it is important to continue this at home. Gradually increase the amount of exercise as you progress at home.

Facing the future
After your heart attack, during your hospital stay and your recovery at home you will have the chance to think about
your lifestyle. There may be some areas related to your lifestyle like diet, exercise, smoking etc. which you will want to change to reduce the risk of another heart attack.

What you can do to help yourself

- After a heart attack, you can gradually start doing more and more for yourself. Judge your progress from week to week rather than from day to day. Pace yourself, gradually increasing your activities as you get stronger and confident.
- Keep in contact with your cardiologist
- Set up a routine for taking your medicines
- Use these convalescence weeks to think about how you could improve your overall fitness, reduce your blood cholesterol levels and control your blood pressure
- Remember to talk with other people about your feelings during these weeks, especially with your partner, your family and your friends, who will want to be involved in helping you recover.
What kind of diet should I take if I am a heart patient?
Diet plays an important role in the development of coronary artery disease as it can affect multiple risk factors responsible for heart disease such as high blood pressure, diabetes, high cholesterol & obesity. Your diet should have plenty of fruits & vegetables, nuts, beans, whole grain & fish. You should avoid diary products, red meat, processed meat, refined carbohydrates like sugar & other processed food.

“Video Ref.:”
• How to prevent heart diseases:
  https://www.youtube.com/watch?v=9t3wfDx4uUk
• How to avoid heart attack and paralysis attack:
  https://www.youtube.com/watch?v=zbF0dQ5B4BM

When we say one should eat healthy diet, we always look for references. Here we are mentioning two types of diets which are used worldwide and healthiest patterns of food habits. Countries where these diets are followed are the ones where incidence of heart diseases are lowest so your diet pattern is very important for health. You can take reference from these diets and can customized your food as per prevalent food articles.
Mediterranean and dash diet have been shown to reduce the incidence of heart attack by 30% in 5 years.

**Mediterranean diet: A heart-healthy eating plan**
The heart-healthy Mediterranean diet is a healthy eating plan based on typical foods and recipes of Mediterranean-style cooking.

* Why Mediterranean diet? The Mediterranean diet incorporates the basics of healthy eating which includes olive oil, lots of veggies and fruits and less of milk product. Most healthy diets include fruits, vegetables, fish and whole grains, and limit unhealthy fats. While these parts of a healthy diet are tried-and-true, subtle variations or differences in proportions of certain foods may make a difference in your risk of heart disease.

* Benefits of the Mediterranean diet Research has shown that the traditional Mediterranean diet reduces the risk of heart disease. The diet has been associated with a lower level of oxidized low-density lipoprotein (LDL) cholesterol — the "bad" cholesterol that’s more likely to build up deposits in your arteries. The Mediterranean diet is associated with a reduced incidence of cancer, Parkinson's and Alzheimer's diseases. Women who
eat a Mediterranean diet supplemented with extra-virgin olive oil and mixed nuts may have a reduced risk of breast cancer.

**Key components of the Mediterranean diet**

- The Mediterranean diet emphasizes on eating primarily plant-based foods, such as fruits and vegetables, whole grains, legumes and nuts
- Replacing butter with healthy fats such as olive oil and canola oil
- Using herbs and spices instead of salt to flavor foods
- Limiting red meat
- Eating fish and poultry
- Enjoying meals with family and friends
- Drinking red wine in moderation (optional)
- Fruits, vegetables, nuts and grains

Grains in the Mediterranean region are typically whole grain and usually contain very few unhealthy trans fats, and bread is an important part of the diet there. However, throughout the Mediterranean region, bread is eaten plain or dipped in olive oil — not eaten with butter or margarines, which contain saturated or trans fats.

Nuts are another part of a healthy Mediterranean diet. Nuts are high in fat (approximately 80 percent of their calories come from fat), but most of the fat is not saturated. Because nuts are high in calories, they should not be eaten in large amounts — generally no more than a handful a day. Avoid candied or honey-roasted and heavily salted nuts.

**Healthy fats**

The focus of the Mediterranean diet isn't on limiting total fat consumption, but rather to make wise choices about the types of fat you eat. The Mediterranean diet discourages saturated fats and hydrogenated oils (trans fats), both of which contribute to heart disease.

The Mediterranean diet features olive oil as the primary source of fat. Olive oil provides monounsaturated fat — a
type of fat that can help reduce LDL cholesterol levels when used in place of saturated or trans fats. Extra-virgin and virgin olive oils are the least processed forms which also contain the highest levels of the protective plant compounds that provide antioxidant effects.

**Wine**
The health effects of alcohol have been debated for many years, and some doctors are reluctant to encourage alcohol consumption because of the health consequences of excessive drinking. However wine in moderation has been associated with a reduced risk of heart disease in some research studies.

The Mediterranean diet typically includes a moderate amount of wine. This means no more than 5 ounces (148 milliliters) of wine daily for women (or men over age 65), and no more than 10 ounces (296 milliliters) of wine daily for men under age 65.

If you're unable to limit your alcohol intake to the amounts defined above, if you have a personal or family history of alcohol abuse, or if you have heart or liver disease, refrain from drinking wine or any other alcohol.

The Mediterranean diet is a delicious and healthy way to eat. Many people who switch to this style of eating say they'll never eat any other way. Here are some specific steps to get you started:

- Eat veggies, fruits and switch to whole grains. An abundance and variety of plant foods should make up the majority of your meals. Strive for seven to 10 servings a day of veggies and fruits. Switch to whole-grain bread and cereal, and begin to eat more whole-grain rice and pasta products.
- Eat nuts - keep almonds, cashews, pistachios and walnuts handy for a quick snack.
- Choose natural peanut butter, rather than the kind with hydrogenated fat added.
• Try olive or canola oil as a healthy replacement for butter or margarine. Use it in cooking.
• Eat herbs and spices make food tasty and are also rich in health-promoting substances. Season your meals with herbs and spices rather than salt.
• Go fish. Eat fish once or twice a week. Fresh or water-packed tuna, salmon, trout, mackerel and herring are healthy choices. Grilled fish tastes good and requires little cleanup. Avoid fried fish, unless it’s sauteed in a small amount of canola oil.
• Choose low-fat dairy. Limit higher fat dairy products such as whole or 2 percent milk, cheese and ice cream. Switch to skim milk, fat-free yogurt and low-fat cheese.

**DASH DIET**

DASH stands for Dietary Approaches to Stop Hypertension. The DASH diet is a lifelong approach to healthy eating that’s designed to help treat or prevent high blood pressure (hypertension). The DASH diet encourages you to reduce the sodium in your diet and eat a variety of foods rich in nutrients that help lower blood pressure, such as potassium, calcium and magnesium.
By following the DASH diet, you may be able to reduce your blood pressure by a few points in just two weeks. Over time, your systolic blood pressure could drop by eight to 14 points, which can make a significant difference in your health risks.

Because the DASH diet is a healthy way of eating, it offers health benefits besides just lowering blood pressure. The DASH diet is also in line with dietary recommendations to prevent osteoporosis, cancer, heart disease, stroke and diabetes. The DASH diet emphasizes vegetables, fruits and low-fat dairy foods — and moderate amounts of whole grains, fish, poultry and nuts.

**DASH diet: What to eat**
DASH diet include lots of whole grains, fruits, vegetables and low-fat dairy products. The DASH diet also includes some fish, poultry and legumes, and encourages a small amount of nuts and seeds a few times a week.

You can eat red meat, sweets and fats in small amounts. The DASH diet is low in saturated fat, cholesterol and total fat.

**Here’s a look at the recommended servings from each food group for the 2,000-calorie-a-day DASH diet.**

- **Grains:** 6 to 8 servings a day

  Grains include bread, cereal, rice and pasta. Examples of one serving of grains include 1 slice whole-wheat bread, 1 ounce dry cereal, or 1/2 cup cooked cereal, rice or pasta.

- Focus on whole grains because they have more fiber and nutrients than do refined grains. For instance, use brown rice instead of white rice, whole-wheat pasta instead of regular pasta and whole-grain bread instead of white bread. Look for products labeled "100 percent whole grain" or "100 percent whole wheat."
• Grains are naturally low in fat. Keep them this way by avoiding butter, cream and cheese sauces.

• Vegetables: 4 to 5 servings a day

• Tomatoes, carrots, broccoli, sweet potatoes, greens and other vegetables are full of fiber, vitamins, and such minerals as potassium and magnesium. Examples of one serving include 1 cup raw leafy green vegetables or 1/2 cup cut-up raw or cooked vegetables.

• Don’t think of vegetables only as side dishes — a hearty blend of vegetables served over brown rice or whole-wheat noodles can serve as the main dish for a meal.

• Fresh and frozen vegetables are both good choices. When buying frozen and canned vegetables, choose those labeled as low sodium or without added salt.

• To increase the number of servings you fit in daily, be creative. In a stir-fry, for instance, cut the amount of meat in half and double up on the vegetables.

• Fruits: 4 to 5 servings a day. Many fruits need little preparation to become a healthy part of a meal or snack. Like vegetables, they’re packed with fiber, potassium and magnesium and are typically low in fat — coconuts are an exception. Examples of one serving include one medium fruit, 1/2 cup fresh, frozen or canned fruit, or 4 ounces of juice.

Have a piece of fruit with meals and one as a snack, then round out your day with a dessert of fresh fruits topped with a dollop of low-fat yogurt. Remember that citrus fruits and juices, such as grapefruit, can interact with certain medications, so check with your doctor or pharmacist to see if they’re OK for
you. If you choose canned fruit or juice, make sure no sugar is added.

- Milk, yogurt, cheese and other dairy products are major sources of calcium, vitamin D and protein. But the key is to make sure that you choose dairy products that are low fat or fat-free because otherwise they can be a major source of fat — and most of it is saturated. Examples of one serving include 1 cup skim or 1 percent milk, 1 cup low fat yogurt.

**DASH diet: Alcohol and caffeine**

Drinking too much alcohol can increase blood pressure. The Dietary Guidelines recommends that men limit alcohol to no more than two drinks a day and women to one or less.

Remember, healthy eating isn’t an all-or-nothing proposition. What’s most important is that, on average, you eat healthier foods with plenty of variety both to keep your diet nutritious and to avoid boredom or extremes. And with the DASH diet, you can have both.
What about smoking?
Smoking is a major risk factor for heart disease. Quitting smoking after heart attack is very important. Smoking in any form like Bidi, Cigarette, Cigar, Hooka, Oral tobacco chewing etc, all are equally harmful. Nicotine present in smoke causes constriction of arteries, increases the chances of clot formation in arteries, raises BP, increases cholesterol deposition by damaging the inner lining of the artery. If you don’t want to have another heart attack, you must quit smoking. Medicines like bupropion etc can help you quit smoking.

“Video Ref. :”
• Heart problems due to smoking :
  https://www.youtube.com/watch?v=OIPSDZNGzAk

How to do followups after Angioplasty or Bypass Surgery.
After Angioplasty, you will report back in OPD for follow-ups and the doctor will ask you to go for a complete blood count to check WBC and platelet count as after angioplasty you will be on double antiplatelets for at least 1 year. On completion of one year, you will get intimation from the hospital for annual health checkup. By doing annual health check again we want to ensure that you are absolutely fine. This annual check will include Blood tests and Echo/TMT or both as per requirement. Please make sure to come for annual health checkups and help us keep you fit after angioplasty for many years.
For the first two or three days at home, it is best to take things easy. Do about the same amount of moving around and exercise indoors as you did in your last few days in the hospital. Make sure you have enough rest. However, each day try to get up, washed and dressed and do some light household activities, going up and down the stairs and some gentle walking. Avoid brisk walking for 2 weeks. Avoid lifting heavy weights.

Remember to get into a routine for taking your medicines. You may find it helpful to write a list of the medicines you need to take and how often you need to take them. DO NOT FORGET TAKING MEDICINE AT ALL.

Gradually increase the amount of physical activity you do as the weeks go by. Aim to do a little bit more each day if you can. Don’t be afraid to go upstairs or out of the house. Many people find that they tire easily in the early stages after a heart attack. This is normal and will pass as your strength and confidence returns.

Walking is an ideal form of exercise during the early weeks after a heart attack. If the weather is fine, go out with a friend.
for a short walk. Getting into the fresh air and doing your deep breathing exercises will help you get better and will help lift your spirits.

However, avoid walking outdoors when it is very cold. Instead, try walking on the spot or down the hallway at home for the same length of time.

Gradually increase the amount of walking you do over the first two or three weeks. If you get symptoms such as angina or breathlessness, inform your cardiologist. It is important to stop and rest. After two or three weeks you should be able to walk longer distances.

**Whatever form of exercise you do...**
- Do not do heavy exercise for 2 weeks after angioplasty
- Gradually build up the amount of activity you do.
- Rest if you feel very tired or breathless, or if you get chest pain and inform your doctor.
- Avoid doing activities after a large meal, when it is very cold or very hot, or at high altitudes. All these would put added strain on your heart.
- If you are doing an exercise that you are not used to, do it in moderation.

**House work**
Start doing light work in the house as soon as you feel fit and able for example washing up and dusting. You can do light gardening, but avoid digging and heavy lifting.

**Driving**
If you have made an uncomplicated recovery after your heart attack, you will be able to start driving again after four weeks. If you ever have an attack of angina while you are driving, you should stop driving. Once your symptoms are controlled and treatment is done, you can start driving again if your heart pumping function is reasonably fine.
Return to work
Most people will be able to go back to their previous job after a heart attack. This may be as early as six weeks after your heart attack if your work is not too physically demanding, or if it only involves light duties. For other people, returning to work depends on the nature of your job, so talk to your doctor. After angioplasty, you can return to work after one week.

Talk to your employer too. They may be willing to give you lighter work for a while when you first go back to work.

Sex
People with heart disease and their partners are often understandably anxious about how sex may affect the heart. Like any other physical activity, having sex can increase the heart rate and blood pressure. This increases the work of the heart and in people with coronary heart disease, can lead to breathlessness or chest pain. However, it is usually safe to have active sex if you can walk about 300 yards on the level comfortably, or climb two flight of stairs or any other physical activity of >5 mets without getting chest pain or becoming breathless. Till then you can have no sex or passive sex.
Sildenafil tablet for erectile dysfunction is safe for men with stable coronary artery disease who are not taking nitrates and alpha blockers. Sorbitrate should not be taken for chest pain if precipitated by sex if you have taken Sildenafil.

If you have had a heart attack, you can safely start having sex again two or three weeks after the attack, as long as your recovery is not complicated. The stairs test is a useful guide. If you tend to have angina attacks brought on by physical exertion, here is some helpful advice.

- Avoid having sex within two hours of a heavy meal
- Keep the bedroom warm and avoid cold sheets.
- Don't have any alcohol for at least three hours before.
- Choose a relaxing atmosphere. Avoid sex if you are tense or tired.
- Get into a comfortable position. Your partner may take the more active role.
- Take your sorbitrate medicine before hand and keep it at the bedside just in case you need it.

Remember also that there are alternatives to intercourse for giving and receiving pleasure. Touching and caressing may be a useful start to increase confidence. Some medicines such as regular beta-blockers and calcium antagonists improve the amount of exercise or activity you can do and can help relieve symptoms that can be brought on by sex.

Impotence after a heart attack may be the result of the emotional stress you are feeling. However, occasionally it can also be the result of drug treatment, including beta-blockers which can affect your sex drive. Talk to your doctor if you are having difficulties.
Alcohol
During the weeks after your heart attack it is best to limit the amount of alcohol you drink. Small amounts, for example a half pint of beer or a glass of wine a day, will do you no harm, but avoid having too much alcohol.

If you are taking sleeping tablets, remember that alcohol will have a more powerful effect. Everyone should avoid binge drinking but this is particularly important if you are taking anticoagulant tablets and antiplatelets like aspirin etc.

Too much alcohol can interfere with the anticoagulant process so, if you do drink alcohol, it is better to have a small amount on a regular basis. Alcohol & Aspirin combination will increase the chances of bleeding from the stomach. Best is to avoid alcohol.

Looking after the career
Often the person who has had a heart attack does very well in the early stages, but the partner or person caring for them gets very tired and run down. If you are looking after someone who has had a heart attack, try to take a rest yourself while the person you're caring for is resting, and to get a good night’s sleep. Don't try to do too much for the

“Video Ref.:”
• Alcohol and tobacco use: https://www.youtube.com/watch?v=3XWVQCaX8ew
person. This is tiring and stressful for both of you and in the end will not help either of you. Try to control how many visitors you have and how long they stay for; it can be exhausting to have too many visitors. Make sure you have time for yourself.

**Holidays**

A holiday can help your recovery as it gives you the chance to relax and laze around. At least that's the idea! However, it is important to plan your holiday carefully to avoid unnecessary problems. It is best not to travel to countries which are very hot or very cold, or to places at a high altitude. It may be wise to go to a place that you have visited before, because it will be familiar to you, and won't produce any unwelcome surprises. It is not the holiday itself that may cause problems. Getting there and back is not always that simple. Plan your trip carefully. Allow plenty of time for whichever form of transport you are taking. Don't carry heavy bags or rush around. If you are going abroad, check your travel insurance to make sure you have enough cover. Take plenty of tablets with you. It may be useful to have a supply both in your hand luggage and in your suitcase. And take a list of all the drugs and doses with you. Avoid travelling during the first month of the heart attack.

**Insurance**

It is advisable for all cardiac patients to carry their medical insurance papers with them, whenever they are travelling.
Handy Instructions for Post Angioplasty Patients

What to Expect at Home
You may have pain in your groin area, arm, or wrist from where the angioplasty catheter was introduced in the form of a flexible tube that was inserted to do the procedure. You may also have some bruising around and below the incision. There will be a bandage or band aid covering it. Dressing and band aid can be removed next day after discharge at the time of bath. Small amount of pain or discomfort is expected which should resolve within a week.

The chest pain and shortness of breath you likely had before the procedure should be much better now.

Self-care
In general, people who have angioplasty can walk around within 6 hours after the sheath removal. Complete recovery takes a week or less. Keep the area where the catheter was inserted dry for 24 to 48 hours.

If the doctor puts the catheter in through your groin:
• Walking short distances on a flat surface is fine. Avoid going up and down the stairs for the first 2 to 3 days.
• Do NOT do yard work, drive, squat, carry heavy objects, or play sports for at least 2 weeks, or until your doctor tells you it is safe.

If the doctor puts the catheter in your arm or wrist:
• Do NOT lift anything heavier than 10 pounds (a little more than a gallon of milk) with the arm that had the catheter.
• Do NOT do any heavy pushing or pulling with that arm.

For a catheter in your groin, arm, or wrist:
• Avoid sexual activity for 2 to 5 days. Ask your doctor when it will be fine to start again.
• Do NOT swim for two weeks. You may take showers, but make sure the area where the catheter was inserted does not get wet for the first 24 to 48 hours.
• You should be able to return to work in 10-14 days if you do not do heavy work.
• You will need to care for your incision.
• Your doctor or nurse will tell you how often to change your dressing if at all needed.
• If your incision bleeds or swells up or becomes pulsatile, lie down and put pressure on it for 20 minutes and report immediately to the hospital.

Restenosis
Angioplasty removes the cause of the blockage in your arteries. Your arteries may become narrow again which is known as restenosis. About 5 % patient can have restenosis in one year. Eat a heart-healthy diet, exercise, stop smoking (if you smoke), and reduce stress to help lower your chances of having a blocked artery again. Your Cardiologist will prescribe you medicines to help lower your cholesterol and chances of restenosis.

Drugs
Most people take aspirin together with another medicine such as Clopidogrel (Plavix), Prasugrel, or ticagrelor (Brilinta) after this procedure. These medicines are blood thinners. They keep your blood from forming clots in your arteries and stent. A blood clot can lead to a heart attack. Take the medicines exactly as your doctor tells you.

Do not stop taking them without talking with your doctor first. There is some risk of bleeding with these medicines. Inform the doctor or the hospital emergency if there is bleeding from nose, teeth, in urine or stool. Black stool and red urine should be noted and reported.

Make sure you have a follow-up appointment scheduled with your heart doctor (cardiologist).
It is very important to start exercise once your Cardiologist permits you.

When to report to the doctor
- Pus-like drainage, redness or unusual warmth at the catheter insertion site
- There is bleeding at the catheter insertion site that does not stop when you apply pressure.
- Your leg or arm below where the catheter was inserted changes color
- Feelings of coldness, numbness, tingling or excessive swelling in the leg or arm of the catheter insertion site.
- A lump at the insertion site: Golf ball-sized at the groin or grape-sized at the wrist.
- Extreme pain or swelling at the catheter insertion site.
- Your pulse feels irregular -- very slow (fewer than 60 beats), or very fast (over 100 to 120 beats) a minute.
- You have dizziness, fainting, or you are very tired.
- You are coughing up blood or yellow or green mucus.
- You have problems taking any of your heart medicines.
- Signs of infection: Redness, warmth, discharge from the wound site or fever (temperature over 101 degrees Fahrenheit).
- For signs of activity intolerance like shortness of breath, chest pain, fatigue or dizziness that last longer than 20 minutes or that return on a regular basis, including chest discomfort, excessive shortness of breath, dizziness or irregular heartbeats.

Annual Health checkups
For all patients who have been diagnosed with heart disease or had undergone angioplasty stenting, it is advisable to go for annual health checkup designed for you. Every year you will get a reminder from the hospital to come for health check where all parameters like lipids, Liver and kidney function tests, Urine, sugar etc will be done and treatment will be modified accordingly. Even if you don't get a reminder, you need to report to the Cardiology deptt for annual health checkup.
Important points to remember:

1. Observe puncture site for any abnormal discharge, redness, pain or swelling
2. Do not discontinue medication prescribed to you after angioplasty, it could be dangerous to stop them leading to clot formation in stent causing heart attack
3. After angioplasty if you need any dental treatment or any other surgery, kindly consult your cardiologist first. On blood thinners bleeding could be a serious issue during dental procedures
4. Regular annual checkups are essential for you so don't miss them
5. Contact your cardiologist in case of any untoward symptoms immediately
6. Avoid situations which can lead to dehydration after angioplasty, keep yourself properly hydrated
7. Regular follow ups as per advice is very important
8. Low fat, low cholesterol diet, lots of fruits and green vegetables are good. Avoid deep fried, bakery and dairy products. Take calories as prescribed by the dietician
9. Normal walking is allowed after 48 hours of angioplasty. Brisk walking & other exercises should be done after 1-2 weeks only

In case of any emergency dial our help line number 15106 for Assistance and Ambulance
What To Expect After Coronary Artery Bypass Grafting

Recovery in the Hospital

After surgery, you'll typically spend 2-3 days in an intensive care unit (CTVS-ICU). Your heart rate, blood pressure, and oxygen levels will be checked regularly during this time.

During this while you will get all essential medicine through a IV line along with oral medications. You will have certain tubings in your chest, stomach and urinary bladder which will gradually be removed in a day or two.

You may receive oxygen therapy (oxygen given through nasal prongs or a mask) and a temporary pacemaker while in the ICU. A pacemaker is a small device that's placed in the chest or abdomen to help control abnormal heart rhythms.

Your doctor may recommend that you wear compression stockings on your legs as well. These stockings are tight at the ankle and become looser as they go up the leg. This creates gentle pressure up the leg. The pressure keeps blood from pooling and clotting.

While in the ICU, you'll also have bandages on your chest incision (cut) and on the areas where an artery or vein was removed for grafting.

After you leave the ICU, you'll be moved to a less intensive care area of the hospital for 3 to 5 days before going home.

Recovery at Home

Your doctor/nurse will give you specific instructions for recovering at home, especially concerning:

- How to care for your healing incisions
- How to recognize signs of infection or other complications
- When to call the doctor right away
- When to make followup appointments

You may also get instructions on how to deal with common side effects from surgery. Side effects often go away within 4 to 6 weeks after surgery, but may include:
· Discomfort or itching from healing incisions
· Swelling of the area where an artery or vein was removed for grafting
· Muscle pain or tightness in the shoulders and upper back
· Fatigue (tiredness), mood swings, or depression
· Problems in sleeping or loss of appetite
· Constipation
· Chest pain around the site of the chest bone incision (more frequent with traditional CABG)

Full recovery from CABG may take 6 to 12 weeks or more.

Your doctor will tell you when you can start physical activity again. It varies from person to person, but there are some typical time frames. Most people can resume sexual activity within about 4 weeks and driving after 3 to 8 weeks.

Returning to work after 6 weeks is common unless your job involves specific and demanding physical activity. Some people may need to find a less physically demanding type of work or work a reduced schedule at first.

**Ongoing Care**

Care after surgery may include periodic checkups with doctors. During these visits, tests may be done to see how your heart is working.

After CABG your doctor will develop a treatment plan that includes lifestyle changes to help you stay healthy and reduce the chance of developing further disease.

Lifestyle changes may include making changes in your diet, quitting smoking, doing physical activity regularly, and lowering and managing stress.

Taking medicines as prescribed also is an important part of care after surgery. Your doctor may prescribe medicines to manage pain during recovery; lower cholesterol and blood pressure; reduce the risk of blood clots forming; manage diabetes; or treat depression.
Post CABG Exercises

Exercises are advised for 3 months after operation, twice daily with 10 repetitions. Rest for 2 minutes after every exercise. Do deep breathing for 10 times after each exercise. Avoid exercise for at least 1 hour after meal.

LEG EXERCISES पैर के अभ्यास

1. Lie down flat raise and fold knees and then straighten legs again.
   पैरों को सीधा रखकर फिर घुमाओ और सीधा करें।

2. Sit on a chair move your foot up and down one by one.
   कुर्सी पर बैठ कर पैर के पंजे को एक एक कर के ऊपर नीचे बलायें।

3. Sit on a chair make one leg straight, hold for 5 seconds then move down repeat it with other leg.
   कुर्सी पर बैठ कर टांग की घुमाने से सीधा करें, 5 सैकेंड तक रोकें फिर नीचे लायें। ऐसा दोनों टांगों से बारी-बारी करें।
**ARM EXERCISES हाथों के अभ्यास**

4. Raise hands sideways, keeping elbow straight then move upwards then bring them back down.
   अपने हाथों को बाहर की तरफ बिना कोहनी मोड़े सीधे खोलें, फिर ऊपर ले जायें, वापिस नीचे लायें।

5. Clasp hands and raise both arms up & down.
   दोनों हथेलियों को आपस में पकड़ लें, और हाथों को ऊपर ले जायें, फिर नीचे लायें।

6. Both hands on the shoulders tip and move the elbow in rotatory manner, both in clockwise and anti-clockwise directions.
   दोनों हाथों को कंधो पर रखकर कोहनी को चक्राकार घुमायें, फिर विपरीत दिशा में घुमायें।

7. Open and close palms
   हाथों की हथेलियों को खोलें और बंद करें।
NECK EXERCISES  गर्दन के अभ्यास

8. Rotate neck sideways
   गर्दन को दायें व बायें घुमायें।

9. Bend neck sideways
   गर्दन को दायें व बायें झुकायें।

TRUNK EXERCISES  कमर के अभ्यास

10. Hold your waist and turn sideways with neck rotation.
    कमर को पकड़ कर दायें बायें घुमें।
PRECAUTIONS (3 months) परेज (3 महीनों के लिये)

1. Support the chest incision with a chest binder provided while coughing, sneezing and laughing.
   जहां सीने में चीरा लगाया गया है, उस भाग को खांसते, छींकते या हंसते समय चेस्ट बाइंडर से सहाना दें।

2. Do not lift weight more than 3 kgs.
   तीन किलो से अधिक भार न उठाएं।

3. Do not bend forward from waist, bend from knees and lift the object.
   कमर से आगे न जुकें, किसी चीज को उठाने के लिए घुटने से जुकें।

4. Do not drive for 6 weeks at least.
   6 सप्ताह तक गाड़ी न चलाएं।

5. Walk straight for 10 minutes, gradually increase time. Do not walk immediately after meal.
   पहले 10 मिनट तक पैदल घूमें। धीरे-धीरे समय बढ़ाएं, सीधे चलें, भोजन के तुरंत बाद न चलें।

6. Climb stairs only where it is necessary. One can climb 10-15 stairs with one attendant.
   अगर जरूरी है तो सेरीज़ करें। एक चरखे में 5 सीडियां चढ़ सकते हैं।

7. For patients with vein graft from legs.
   जिन रोगियों को पैर से नस्ल निकाल कर लगाई गई है।
   a. While sitting, raise feet on a footstool.
      पैरों को सटूल पर रखते हुए ही बैठें।
   b. Do not sit cross-legged.
      पालती मार कर न बैठें।

8. Incentive spirometry- 4 to 6 times in a day.
   इनस्टेंट्वियुएशन स्पाइमेट्री दिन में 4 से 6 बार करें।

9. Avoid side turning for 2 months.
   2 महीने तक कपड़ा लेने से बचें।

10. Avoid Sexual activity for 2 months.
    2 महीने तक मात्र गतिविधियों ना करें।
Information for Patients with Artificial Heart Valves or Post Valve Replacement

Information About Anticoagulation Therapy

Indications for Anticoagulation therapy

Oral anticoagulant can be used for:

1. Treating and preventing blood clots in the blood vessels, eg. rheumatic heart disease, atrial fibrillation and after insertion of artificial (prosthetic) heart valves.

2. Treatment and prevention of blood clots lodged in the veins of the leg (deep vein thrombosis)

3. Treatment and prevention of blood clots that have travelled to the lungs (pulmonary embolism)

Target INR levels condition:

- Post - Mitral Valve Replacement 2.5-3.5
- Post - Aortic Valve Replacement 2.0-2.5
- Post - Double Valve Replacement 2.5-3.5
- Deep Vein thrombosis 2.0-3.0
- Non Valvular Atrial fibrillation 2.0-3.0

Duration of anticoagulation therapy

Duration of anticoagulation therapy varies in different group of patients. It can range from few months to lifelong duration.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Condition</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atrial fibrillation (arrhythmia)</td>
<td>Indefinite duration.</td>
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<tr>
<td>2.</td>
<td>Bioprosthetic heart valve</td>
<td>3-6 months post operatively.</td>
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<td>3.</td>
<td>Mechanical prosthetic valve</td>
<td>life long.</td>
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<tr>
<td>4.</td>
<td>Venous thromboembolism</td>
<td>As per your doctor’s advice</td>
</tr>
</tbody>
</table>

Problems associated with therapy

Risk of haemorrhage is closely related to the intensity of anticogulation. Risk of bleeding is higher during the first month and then decreases gradually owing to the fact that prothrombin time fluctuates more initially.
About Food-Drug interaction

**Foods to be avoided**
- All Green Leafy Vegetables like spinach, mustard leaves, cabbage, cauliflower, broccoli, lettuce.
- Peas, Beans, Spring Onion.
- Soyabean oil, Dal, Nuggets, Chunks.
- Organ meats - liver, kidney & red meat

**Foods to be taken in moderate quantity**
- Rajmah and Malka masur
- Egg Whites and Chicken
- Tomatoes total 2 no.in a day

*Rest all can be taken freely.*

**Precautions**
- Do not take Acitrom if you are allergic to it or to any of its ingredients.
- Tell your physician if you have allergies to any other medications, dyes, food, preservatives, or any other substances.
- If you are pregnant, trying to get pregnant, or breast feeding, and are on other prescription, nonprescription, or herbal and dietary supplements, inform your doctor.
- Alcohol and products high in vitamin k (such as liver, vegetable oil, egg yolks, and green leafy vegetable) may interact with Acitrom, so discuss with your cardiologist for use of these substances while taking this medication.
## Major drug interactions with Acitrom

<table>
<thead>
<tr>
<th>Anticoagulation response Increased</th>
<th>Anticoagulation response decreased</th>
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<tbody>
<tr>
<td>Acetaminophen</td>
<td>Antithyroid drugs</td>
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<tr>
<td>Amiodarone</td>
<td>Barbiturates</td>
</tr>
<tr>
<td>Androgens</td>
<td>Carbamazepin</td>
</tr>
<tr>
<td>Allopurinol</td>
<td>Cholestyramine</td>
</tr>
<tr>
<td>Aspirin (high dose)</td>
<td>Gluthimide</td>
</tr>
<tr>
<td>Cimetidine</td>
<td>Griseofulvin</td>
</tr>
<tr>
<td>Clofibrate</td>
<td>Oral contraceptives</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>Rifampicin</td>
</tr>
<tr>
<td>Disulfiram</td>
<td>Sucralfate</td>
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<tr>
<td>Dipyridamole</td>
<td>Erythromycin</td>
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<tr>
<td>Fluconazole</td>
<td>Fluoxetine hcl.</td>
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<tr>
<td>Glucagon</td>
<td>Indomethacin</td>
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<tr>
<td>Liquid paraffin</td>
<td>Metronidazole</td>
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<tr>
<td>Phenylbutazone</td>
<td>Phenyltoin</td>
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<tr>
<td>Phenotypical</td>
<td>Probenecid</td>
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<tr>
<td>Phenformin</td>
<td>Quinidine</td>
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<tr>
<td>Sulfinpyrazone</td>
<td>Tamoxifen</td>
</tr>
<tr>
<td>Tolbutamide</td>
<td>Thyroid hormone</td>
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<tr>
<td>Trimethoprim-sulfamethoxazole</td>
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</table>

*Note: Kindly inform your doctor about your current medication.*
Frequently asked question for post valve replacement patients:

Is Acitrom/Warfarin safe during pregnancy?
Anticoagulants may cause birth defects. They may also cause other problems affecting physical or mental growth of the fetus or newborn baby. If taken during the last few weeks of pregnancy, anticoagulants may cause severe bleeding in both the fetus and the mother before or during delivery and in the newborn infant. The patient should not begin to take this medicine during pregnancy, and should not become pregnant while taking it. Anticoagulants may also cause severe bleeding in the mother if taken soon after the baby is born.

Is it safe during Breast feeding?
Acitrom/Warfarin is not likely to cause problems in nursing babies. Other anticoagulants may pass into the breast milk. A blood test can be done to see if unwanted effects are occurring in the breast fed baby. If necessary, another medicine that will overcome any unwanted effects of the anticoagulant can be given to the baby.

Is it safe for Children?
Very young babies are especially sensitive to the effects of anticoagulants. This may increase the chance of bleeding during treatment. So it should not be used in very young babies.

Can it be used for elderly patients?
Elderly people are especially sensitive to the effects of anticoagulants. This may increase the chance of bleeding during treatment. So it has to be taken with the advice of the cardiologist strictly.

What is the best time to take Acitrom/Warfarin?
It should be preferably taken in the evening. But the most important thing is to take it at the same time every day. The advantage of the evening dose is, in case a test has been done to check INR in the morning, the dose can be changed the same day if need be. The blood test should not be done soon after taking the medicine.
Should it be taken after meals?
Acitrom/Warfarin should not be taken immediately after a meal. It should be taken one-and-a-half-hour before or after the meal. Food impairs its absorption from the stomach.

What if I miss my dose?
It is recommend that the patient takes the missed dose as soon as he/she remembers it. Obviously, this advice is dependent on when the patient remembers that he/she has missed a dose. If the time of the next dose is approaching when he/she remembers, it is important that the patient realises that it is not appropriate to 'double up' on the dose to compensate for the missed dose. Instead, he/she should skip the missed dose and continue with his/her dosing schedule as normal.

The patient should remember to record the date of the missed dose and inform the doctor at his/her next visit to the cardiologist. If doses are missed for two or more days, the patient should contact the doctor immediately.

For how long should the drug be taken?
This varies from patient to patient. For some it is lifelong and for others it is temporary. Your doctor can advise you on this.

Should special precautions be taken during travel?
Remember to take the medicine regularly. Stick to normal diet and avoid excessive alcohol. In case you are away for a long period, your doctor can advise you on blood tests. If INR is grossly beyond the target levels, inform your cardiologist or a local doctor before taking the next dose.

Can I take juices or aereated drinks?
Ans. Yes

I was having serve toothache & my dentist had prescribed me pain killer (NSAID). I am taking Acitrom for last 3 years after my valve replacement, should I take pain killer? Painkillers can be taken for short time with strict monitoring of PT (INR).
I was prescribed Acitrom & Clopitab (75mg) after an episode of pulmonary thromboembolism. Is it safe to take both medicines for a long time.
For pulmonary embolism only Acitrom is required but both drugs are sometimes required when coronary artery disease is coexisting. Risk of bleeding with the combination is more.

Recently I developed pain in my abdomen and found to have Gall Stones. My surgeon has advised for laparoscopic removal of gall bladder. I am on Acitrom for last one year after my valve replacement. What to do?
Stop Acitrom for 3-7 days before surgery, let the INR value come below 1.3. Heparin can be taken during this period to prevent clotting of valve.

By taking Acitrom, will I suffer from deficiency of Vitamin K?
No. It simply competes with some factors & inhibits the synthesis of specific coagulation factors in liver. Acitrom does not reduce levels of vitamin K.

I am taking Acitrom regularly after my valve replacement I have started Yoga since 2 month. My question is how to reduce & finally stop Acitrom? Is it possible?
Your doctor will decide whether you can stop it. The doses are adjusted according to PT (INR) & no reduction is required. When ever INR is high or if bleeding occurs, it should be stopped & then restarted at lower doses.

**Note : Please keep these points in mind :-**
- Remind the doctor, dentist and others about anticoagulation treatment.
- Take the anticoagulant Acitrom/Warfarin dose at the same time each day, preferably in the evening
- Keep a note of any missed doses.
- Do not take an extra dose of warfarin to compensate for a missed dose.
- Avoid crash diets or binge drinking.
- Be consistent in intake of certain foods.
• Do not take aspirin or other NSAIDs unless they have been prescribed by a cardiologist.
• Look out for signs of bruising or bleeding.
• Ensure that he/she does not run out of his/her medicines. Have a consistent intake of vitamin K recommended.
• Dietary allowances for adult men is 80 mcg and women 65 mcg per day yet avoid Vitamin K supplements. Vitamin K improves blood clotting.

Foods high in Vitamin K are:
Green leafy vegetables (spinach, kale), liver etc. But, milk, meat, eggs, cereal, fruits and vegetables contain small amounts. Vitamin K content of food is not known with a degree of accuracy to be listed on food labels.

What to do if someone has a heart attack or cardiac arrest.
Ideally, everyone should know what to do if someone has a heart attack or cardiac arrest. About three in every four cardiac arrests happen away from the hospital and there may be nobody else around to help.

If someone has a heart attack
1. Get help immediately
2. Get the person to sit back in a comfortable position
3. Phone 15106 for an ambulance and 9811561000, 9999714000 & 0129-427777 for Emergency.
If a person seems to be unconscious - approach with care. To find out if the person is conscious, gently shake him or her and shout loudly, are you all right?

If there is no response, shout for help & start CPR (Cardiopulmonary resuscitation) till patient reaches the hospital emergency.

You will need to reach the casualty and take suitable action.
**Cardiac Rehabilitation** - Consists of graded exercises under the guidance of your cardiologist according to the condition of your heart. It also includes your psychological counselling to keep you mentally healthy & positive towards life. The purpose is to bring you back to normal life.

**How Cardiac Rehabilitation Can Help Heal Your Heart?**
If you have a heart attack or other heart problem, cardiac rehabilitation (rehab) is an important part of your recovery.

Cardiac rehab can help prevent another, perhaps more serious, heart attack and can help you build heart-healthy habits. Cardiac rehab not only can help a person recover from a heart problem, but it can also prevent another heart problem in the future.

**What is cardiac rehab?**
Cardiac rehab is an important program for anyone recovering from a heart attack, heart failure, or other heart problem that required surgery or medical care.
Cardiac rehab program includes:
Physical activity.
Education about healthy living, including healthy eating, taking medicine as prescribed, and ways to help you quit smoking.
Counseling to find ways to relieve stress and improve mental health.

A team of people may help you through cardiac rehab, including your health care team, exercise and nutrition specialists, physical therapists, and counselors or mental health professionals.

Who needs cardiac rehab?
Anyone who has had a heart problem, such as a heart attack, heart failure, or heart surgery, can benefit from cardiac rehab. Studies have found that cardiac rehab helps men and women, people of all ages, and people with mild, moderate, and severe heart problems.
How does cardiac rehab help?
Cardiac rehab can have many benefits to your health in both the short and long-term, including:

- Strengthening your heart and body after a heart attack.

- Relieving symptoms of heart problems, such as chest pain.

- Building healthier habits, including getting more physical activity, quitting smoking, and eating a heart-healthy diet. A nutritionist or dietitian may work with you to help you limit foods with unhealthy fats and eat more fruits and vegetables that are high in vitamins, minerals, and fiber.

- Reducing stress.

- Improving your mood. People are more likely to feel depressed after a heart attack. Cardiac rehab can help prevent and lessen depression.

- Increasing your energy and strength, making daily activities easier, such as carrying groceries and climbing stairs.

- Making you more likely to take your prescribed medicines that help lower your risk for future heart problems.

- Preventing future heart problems and death. Studies have found that cardiac rehab decreases the chances you will die in the five years following a heart attack or bypass surgery by around 20% to 30%.

Regular followups & sharing your additional health related problems with your heart specialist is very essential to find
What to do if someone’s heart stops and the person becomes unconscious.
Remember C, A, B – Circulation, Airway, Breathing

Circulation
Check
Check for signs of circulation. This means checking for signs of normal breathing and pulse. Take not more than 10 seconds doing this.

Action: Chest compression. If there are no signs of a circulation, or if you are at all unsure, start chest compression.

Find the notch at the bottom of the breastbone. Measure two fingers width above this. Place the heel of one hand there. Place your other hand on top. Press down firmly and smoothly 15 times. Do this at a rate of about 100 times a minute – that’s faster than one each second.

Repeat 2 rescue breaths and then 15 chest compressions. Keep doing the 2 rescue breaths followed by 15 chest compressions until:
- The person shows signs of life, or
- Professional help arrives, or
- You become exhausted

Airway
Open the person's airway by titling the head back and lifting the chin.

Breathing
Check, look, listen and feel for signs of breathing for up to 10 seconds

Action: Rescue breathing
- If the person is unconscious and not breathing, phone 15106 & 9811561000 for an ambulance and 9999714000 & 0129-4277777 for Emergency.
• Put the person’s face upwards on the floor.
• Open the airway again and give two of your own breaths to the person. This is called “rescue breathing”
• Close the person’s nostrils with your fingers and thumb and blow into the mouth. Make sure that no air can leak out and that the chest rises and falls.

“Video Ref.:”
• British Citizen Preferred Faridabad Hospital & Doctor for his High-Risk Heart Surgery- JK 24x7 News:
  https://www.youtube.com/watch?v=jqNmmVuU4bE&t=3s
• Heart diseases in winters - India News:
  https://www.youtube.com/watch?v=rKjXyCIYNRU&t=6s
• Heart Health - P7News: https://www.youtube.com/watch?v=6dPLOCDPxdw
BASIC LIFE SUPPORT ALGORITHM

**Scene Safety**

*Unresponsive No breathing or no normal breathing*

*Call for Help (Activate ERCC) get AED / Defibrillator*

*Check Pulse (with 10 seconds) No Pulse*

*Start CPR (30:2 in case of adult)*

*2 Rescue Breaths (1 breath over 1 second with visible chest rise)*

*5 cycle of chest compression & ventilation*

*No Pulse Resume CPR*

*HELP ARRIVES*

*Ventricular Fibrillation*  
*Pulseless Ventricular Tachycardia*  
*Shockable Rhythms*

*Resume CPR after shock*

**High Quality CPR**

- Rate at least 100/min
- Compression depth at least 2 inches (5 cm)
- Allow complete chest recoil after each compression
- Minimize interruptions in chest compressions
- Avoid excessive ventilation
I was refused for angioplasty in London, saying it’s complicated & very difficult.

I am thankful to Metro Hospital, Faridabad especially Dr. S.S. Bansal, I congratulate him for solving my serious problem...

*British Citizen - Ghany Sadoon (Architect in London)*

Rare 7 Stents in Heart, Brain and Kidney Arteries done for the First Time in the country by Dr. S.S. Bansal
यदि इनमें से कोई भी लक्षण आपको है तो नजर अन्दाज ना करे आप Angina या Heart Attack के शिकार बन सकते है तुरंत अपने डॉक्टर से सम्पर्क करे

- छाली में दर्द या भारीपन या पैस का भरना
- दोनों हाथों में या बापे हाथ में दर्द
- पीठ के बीच में दर्द
- कंधे में दर्द
- गले में घूटना
- गलदन में दर्द

Heart Arrhythmia के लक्षण
- दिल का जोर जोर से घड़कना
- अंचला या चक्कर आना
- बेहोश हो जाना

Weak Heart के लक्षण
- सांस का फूलना
- युक्ता चलकर, कम काम करके थकना
- पैरो में भूलन

इसके अलावा यदि आप High BP, High cholesterol, High Sugar या आपके परिवार में पहले भी किसी की Heart Disease है। हमारी Helpline 15106 पर Call करके हमारे 10 Heart specialist में से किसी का भी Appointment ले सकते है और Free Ambulance भी ले सकते है।