



- Dr. Shantanu Deshpande

About Author

Dr Shantanu Deshpande is an Interventional and consultant cardiologist practicing at Chembur and Thane. He did his MBBS from prestigious Seth G S Medical College and KEM hospital. He then joined T N Medical College and Nair Hospital for MD medicine. He topped the MD exams in year 1999. He further pursued his DM in cardiology from Grant Medical College and JJ hospital. He was awarded gold medal in year 2003 at National level by National Board of examinations. He then worked for 2 years at Grant Medical College as Lecturer in cardiology gaining valuable experience. He then worked at Bombay Hospital and Medical Research centre as Associate consultant cardiologist for two and half years. He currently practices at Just Care Heart clinic, Chembur and Dr Godbole hospital, Thane. He is attached to Dr D Y Patil Medical College as Associate professor.

Understanding **HEART ATTACK** *& Caring for your heart*



- Dr. Shantanu Deshpande



1. Understanding HEART ATTACK

1.1 HEART ATTACK

- What is Heart Attack?
- Why do arteries get choked up suddenly?
- How to recognize a Heart Attack?
- How Heart Attack is treated?
- Which treatment is better?
- Are there any side effects or risk of this treatment?

1.2 MINOR HEART ATTACK

- What is called a minor Heart Attack?
- How are minor Heart Attacks treated?
- How long I need to take medicines after Heart Attack?
- Can I get Heart Attack again?

1.3 PATIENT QUERIES

- Why do doctor insist on taking immediate decision?
- How long patient will be kept in ICU?
- Do patients need to undergo Angiography after treatment?
- When can I resume my work?
- When can I drive?

2. Understanding CARDIAC DIAGNOSTICS

2.1 ECHO

- What is ECHO and Ejection Fraction?
- Can my ejection fraction improve?

2.2 ANGIOGRAPHY

- What is Angiography?
- What preparation is required for Angiography?
- What happens during Angiography?
- What are possible outcomes of Angiography?
- How do I know significance of blockages?
- Do I need to undergo further treatment immediately?
- What happens after Angiography?
- What are the risks of these procedures?
- How should I care for myself at home?

3. Understanding ANGIOPLASTY

3.1 ANGIOPLASTY

- What is Angioplasty?
- Is it a surgery?
- How it is done?
- Why are stents put, why not only balloon?

In this BOOK...

3.2 STENTS

- What are stents?
- What are types of stents?
- Which stent is good for me?
- What are dissolving stents?
- Why so much price difference in various types of stents?

3.3 PATIENT QUERIES

- How long will my stent last?
- Are there chances of reblockage?
- Does this procedure carry any risk?
- How many stents can be put in a given patient?
- What is Adhoc Angioplasty?
- What's Staged Angioplasty?
- So above how many blocks bypass is advised?
- Is it true that blockages can be taken out by medicines?
- I heard that Angioplasty or bypass is unnecessary?
- Is there risk to life in these treatments?

3.4 POST ANGIOPLASTY PROCEDURE

- What happens after Angioplasty?
- When will be I discharged?
- What do I need to do when discharged from the hospital?
- How soon should I see my doctor again?



4. Life after ANGIOPLASTY

- Now that I've been treated, what should I be concerned about once I get home?
- I feel great! I'm working, gardening, playing tennis, and taking long walks. Why do I need to take all these medications?
- But didn't my cardiologist fix my heart?
- What are risk factors?
- Why is my diet so important?
- What about exercise?
- How soon can I have sex?
- What are my risks for more serious heart disease problems?
- If I follow all these guidelines, will I be able to do everything I want to do?
- Where do I go from here?

5. General Guidelines to prevent HEART DISEASE

- Understanding the risk factors for heart disease
- Lifestyle Appraisal Chart
- Follow Simple Rules in Diet
- Dos and Dont's

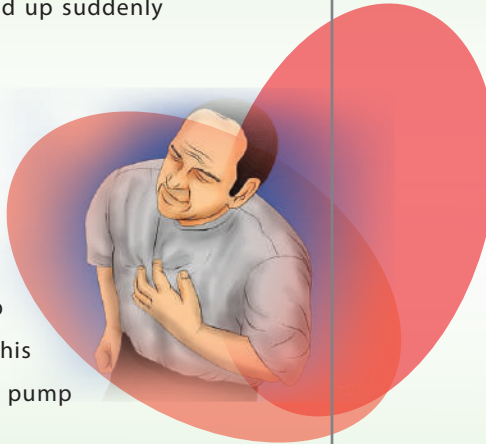


1. Understanding HEART ATTACK

1.1 HEART ATTACK

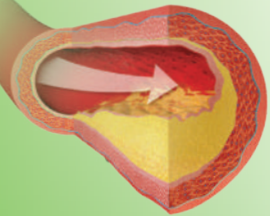
Heart Attack occurs when one of the arteries get choked up suddenly there is stoppage of blood flow to the heart.

Heart is a vital organ in the body which pumps blood to all the organs and tissues in the body via network of blood vessels. This pump itself gets blood supply via three arteries, two on left side and one on the right side of heart. When one of the arteries get choked up suddenly there is stoppage of blood flow to the heart. This results in severe chest pain associated with stoppage pump function of that portion of heart.



Why do arteries get choked up suddenly?

There are many reasons for the same. Initial process is of the deposition of the cholesterol in the blood vessels which can be minor or major. But this cholesterol is separated from blood by thin polythene like covering called endothelium. Deposition of cholesterol in blood vessels can be because of diabetes, high blood pressure, raised blood cholesterol, familial tendency, and smoking. Any stress or smoking or high BP disrupts this covering resulting in cholesterol coming in contact with blood. This further causes clot formation over and above preexisting block resulting sudden occlusion of the artery.



How to recognize Heart Attack?

Any severe chest pain which is central, left hand or jaw pain which starts suddenly should not be neglected especially who smoke and have diabetes or are elderly. Chest pain is the most common symptom of a heart attack. You may feel the pain in only one part of your body, or it may move from your chest to your arms, shoulder, neck, teeth, jaw, belly area, or back. The pain can be severe or mild.

It can feel like:

- A tight band around the chest
- Severe indigestion
- Something heavy sitting on your chest
- Squeezing or heavy pressure



The pain usually lasts longer than a few minutes. Symptoms may also go away and come back. or mild.

Other symptoms of a Heart Attack can include:

- Anxiety
- Cough
- Fainting
- Shortness of breath
- Nausea or vomiting
- Palpitations (feeling like your heart is beating too fast or irregularly)
- Light-headedness, dizziness
- Sweating, which may be very heavy





Some people (the elderly, people with diabetes, and women) may have little or no chest pain. Or, they may have unusual symptoms (shortness of breath, fatigue, and weakness). A "silent Heart Attack" is a heart attack with no symptoms.

Not everyone having a heart attack have typical symptoms. If you've already had a heart attack, your symptoms may not be the same for another one.

Many times this pain is neglected as gas pain. An urgent ECG diagnoses Heart Attack in 80 % of cases. Some times ECG may even be normal but still it can be heart attack. An urgent medical attention to a cardiac hospital is essential

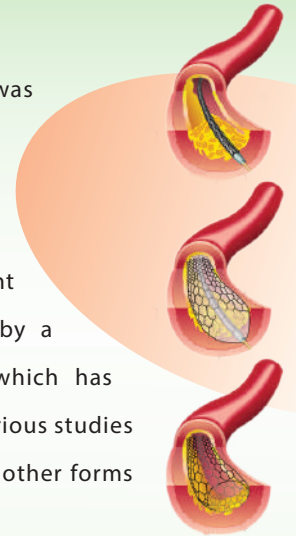


How Heart Attack is treated?

Heart Attack is a life threatening condition. Most of the deaths occurring due to Heart Attack are in first hour. Immediate admission to ICU with cardiac monitoring is essential part of treatment. For removal of clot either a medicine can be given known as **Thrombolytic (clot buster)** or an **emergency Angioplasty** can be done.

Which treatment is better?

Previously a medicine called Streptokinase was used for clot dissolution. It used to work in only 50 % of patients. Now a days, a new generation of medicines which are more costly are used which work in 75% of patients. But best treatment is immediate Angioplasty with clot removal by a special catheter and implantation of stent which has success rate of more than 96%. It is proven in various studies that primary Angioplasty saves more lives than other forms of treatment during heart attack.



Are there any side effects of this treatment?

Clot busting medicine pose risk of bleeding which can be sometimes very serious, but this occurs in less than 1 % of patients. Primary Angioplasty also has risk of 1% which includes bleeding, chills, lowering of blood pressure.





1.2 MINOR HEART ATTACK

What is Minor Heart Attack?

Some times there is intermittent chest pain associated with minor ECG changes but no damage to heart and ejection fraction. This can be due to high grade blockage in blood vessel (90% and above) or intermittent partially occluding blood clot. These are generally warning signs before major attack.

How are Minor Heart Attacks treated?

These patients are again admitted in ICU and started on blood thinning medicines. Early Angiography and Angioplasty in these conditions saves lives, preferably done within 24 hours of presentation.

How long I need to take medicines after Heart Attack?

Some medicines are lifelong. Statins (cholesterol reducing drugs) and blood thinners are prescribed life long as a preventive strategy.



Can I get Heart Attack again?

Patients who have had heart attack are more prone to repeat heart attacks. But studies have shown it can be prevented more than 90 % of times with following advices-



- ✓ Smoking or tobacco cessation
- ✓ Regular drug therapy with anti cholesterol drugs and blood thinners
- ✓ Strict control of diabetes
- ✓ Strict control of blood pressure
- ✓ Dietary control
- ✓ Cardio exercises (Running, Walking, Swimming, Cycling, and Skipping)

1.3 PATIENT QUERIES

Why do doctor insist on taking immediate decision?

During Heart Attack earlier the treatment more are chances of better survival of patient and less complications. Angioplasty done within 90 minutes of Heart Attack saves more lives and also normalizes the patient at the earliest. Same is the case for drug therapy.





How long patient will be kept in ICU?

Every individual patient is different. These decisions are taken after assessing condition of the patient. Most of patients will stay in ICU for 2-3 days.

Do patients need to undergo Angiography after treatment?

Those patients who undergo treatment with drug therapy do need to undergo Angiography again to check underlying cholesterol blockage; whereas those who have undergone primary Angioplasty, need not undergo it again. In all patients who have undergone primary Angioplasty require less stay, improve faster and is less expensive than drug therapy.

When can I resume my work?

Most patients are required to take rest for 4 weeks. But early ambulation with supervision is promoted. It depends on the severity of the Heart Attack and may vary between 2 week to 3 months.

When can I drive?

Most of patients are allowed to drive after 4 weeks.



2| Understanding CARDIAC DIAGNOSTICS

2.1 ECHO

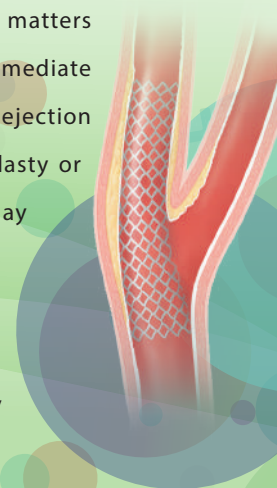
What is ECHO and Ejection Fraction?

ECHO is sonography of heart. It determines pumping capacity of heart, function of valves, chamber size and any other anomalies. Ejection fraction is the percentage of blood remaining in the heart after being pumped out of ventricle. Normally it is around 55-70 %. It goes down after heart attack but can be avoided by early treatment.

$$\text{Ejection Fraction (\%)} = \frac{\text{Amount of blood pumped out of the ventricle}}{\text{Total amount of blood in ventricle}}$$

Can my Ejection Fraction improve?

Yes, it can. Early restoration of blood flow in the blood vessel can improve ejection fraction. But if the muscles are damaged permanently it is very unlikely that it will improve. What matters most in heart attack is early medical attention and immediate treatment with Angioplasty or drugs, so as to preserve ejection fraction. Once ejection fraction is low, medicines, Angioplasty or Bypass surgery can improve it by 5-10 % (this is not fixed may vary patient to patient). Some new treatments like biventricular pacemaker can improve it by 5%. But irreversibly damaged heart rarely shows improvement. These patients' symptoms can be well controlled by medicines.





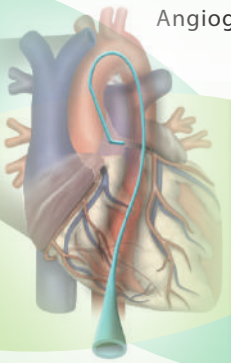
2.2 ANGIOGRAPHY

What is Angiography?

Angiography is a diagnostic test for diagnosing blocks in arteries supplying blood to heart known as coronary arteries. This test requires brief day care hospitalization. Four hours fasting is needed before

Angiography. This test is carried out under local anesthesia through wrist or leg. Initially under local anesthesia a small plastic tube called sheath is put into the artery.

Contrast dye is injected into the heart arteries through a catheter (thin, plastic tube). This allows the doctor to see on an X-ray screen where an artery is narrowed or blocked. This is taped in digital format on a CD.



What preparation is required for Angiography?

At Home

- You should be accompanied by a responsible adult
- You should be fasting for 4 hours at least before scheduled test.
- Take your regular medicines except Metformin (anti diabetes medicine)
- If you are on Insulin, take half dose or consult your doctor before
- Carry all old reports and blood test reports as advised by your doctor

At Hospital

- You will have to stay in the hospital for 4 to 12 hrs depending on route through which Angiography is performed (wrist or groin) and depending on your general condition
- You will be admitted after completing paper formalities to ward or day care
- Your wrist and groins will be shaved
- A intravenous line will be taken and some injections are given. You will wait for your turn for Angiography at scheduled time

What happens during Angiography?

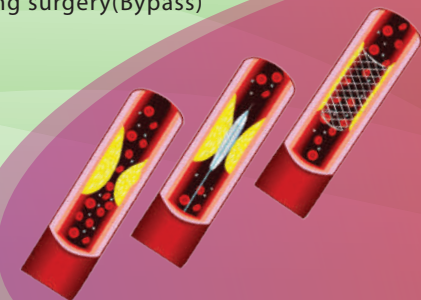
You will be taken to the Cath Lab and asked to lie down on table. After cleaning your hand and groin with antiseptics you will be fully covered with sterile drape. A small injection will be given at chosen site (hand or groin) for local anesthesia. Mostly Angiography is done via hand now a days, but sometimes groin may be chosen due to small size or other abnormalities in hand arteries. After local anesthesia is administered, a small plastic tube is placed in hand or groin blood vessel. Through this long catheters reach heart vessels and contrast is injected. Process of contrast injection is filmed on X-ray and recorded in digital video format.

What are possible outcomes of Angiography?

After Angiography your blockages will be assessed. Your relatives and you will be informed about status of blockages and their treatment. There are three possibilities here -

1. Its normal or you have minor blockages requiring only drug treatment
2. You have blockage but those can be treated with Angioplasty
3. You have multiple blockages requiring surgery(Bypass)

You may be given option of undergoing Angioplasty at the same time for sake of convenience and ease of procedure provided you and your relatives agree.





How do I know significance of blockages?

There are three major blood vessels supplying blood to heart and there are many smaller tributaries. There might be minor or major blockage in these arteries. A block more than 70 % in a major artery can result in significant restriction of blood flow in heart causing symptoms. Small vessels also can have blockages. Treatment strategy can be decided by your doctor after Angiography depending on number of major vessels affected, number of significant blocks, your previous medical conditions like diabetes, asthma, heart pumping status and general condition of patient.



Do I need to undergo further treatment immediately?

Most stable patients who do not have heart attack can wait to take decision, but those patients with acute heart attack should be treated immediately for blockages. Angioplasty can be performed at the same sitting of angiography as it can be performed through the same route as angiography. For most of stable patients it is not urgent unless blockage in main artery or acute heart attack. But patients with acute heart attack are taken up for Angiography with intention of performing immediate Angioplasty. In such situations blockage should be opened up in 90 minutes, so it is essential to take rapid decisions as it can be life saving.

What happens after Angiography?

If done through hand - Once Angiography is performed a compression bandage will be given to your hand for 4 hrs or 6 hrs for groin. You will be discharged after that. Do not carry any weight with that hand for 48 hrs. Report if there is bleeding or swelling or pain in the hand. You can pull the dressing next day

If done through Groin - You are not supposed to move your limb after Angiography for 4 hrs. Kindly ask for pot if you want to pass urine. You will be mobilized after 4 hrs. Report if there is bleeding or swelling or pain in the groin. You can pull the dressing next day

If Angioplasty is performed immediately - You will be kept in ICU for 24 hrs and then depending on your condition you will be discharged next day or after 48 hrs.

What are the risks of these procedures?

The level of risk depends on the health of the patient. You should ask your doctor about your specific risks. The risk of death is very low, but it is higher for people with severe heart disease. Inserting and moving the catheter through the artery may cause:

- Bleeding or bruising
- Blood clots
- Injury to the artery or vein.
- A small risk of stroke
- A very small chance of a Heart Attack or a need for bypass surgery.





- cause a drop in blood pressure or irregular heart rhythms (your doctor may ask you to cough during your test or treatment to prevent these problems)
- worsen existing kidney disease (in very rare cases, it can cause kidney failure).
- cause hives, rash, nausea or more severe reactions. If you know you are allergic to contrast dye, tell your doctor or nurse. You may be able to take medicine to reduce the side effects.

How should I care for myself at home?

After you go home:

- Have an adult stay with you for 24 hours.
- Drink plenty of fluids.
- You may eat your normal diet, unless your doctor tells you otherwise

For 24 hours:

- Relax and take it easy.
- Do NOT smoke.
- Do NOT drive or operate machines at home or at work.
- Do NOT drink alcohol.
- Remove the bandage after 24 hours. If there is minor oozing, apply another bandage and remove it after 12 hours.



- Do not have sex, or do any heavy exercise
- Do not take a bath, or use a hot tub or pool for at least 3 days.
- You may shower.
- Do not stoop or squat.
- When you cough, sneeze or move your bowels, hold your hand over the puncture site and press gently.
- Do not lift more than 2.5 Kg or exercise your arm (tennis, bowling) for at least 3 to 5 days.
- Do not use lotion or powder near the puncture site for 3 days.



Care of Groin Site:

It is normal to have a small bruise or lump at the site. Do not scrub the site.

Care of Wrist or Arm Site:

It is normal to have soreness at the puncture site and mild tingling in your hand for up to 3 days. For 2 days, do not use your hand or arm to support your weight (such as rising from a chair) or bend your wrist (such as lifting a garage door).

If you start bleeding from the site in your Groin:

Lie down flat and press firmly on the site. Call your doctor as soon as you can.

If you start bleeding from the site in your Arm:

Sit down and press firmly on the site with your fingers for 10 minutes. Call your doctor as soon as you can. If the bleeding stops, sit still and keep your wrist straight for 2 hours.

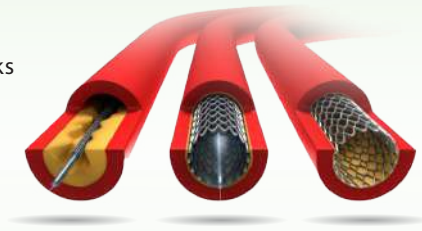


3. Understanding ANGIOPLASTY

3.1 ANGIOPLASTY

What is Angioplasty?

Angioplasty is procedure in which blocks in heart arteries are cleared with the help of balloon and stent.



Is it a Surgery?

This procedure is similar to Angiography. It is done either through hand or leg. Blocks are taken out with the help of balloon and stent. This is not surgery, no stitches or cuts are taken.

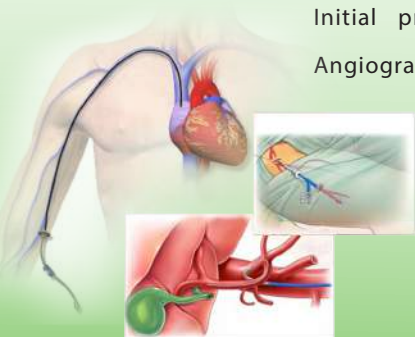
How it is done?

Initial process of inserting catheter is similar to Angiography. A small wire measuring 0.014' inch is placed across block via a catheter from hand or groin. Then a small balloon is introduced across the block and inflated.

After balloon inflation a small metal mesh spring called stent is placed across the block

and inflated. Once stent is placed across the block,

blood flow to heart normalizes. Then catheter balloon and wire are taken out. Stent remains at block site lifelong.



Why are stents put, why not only balloon?

Angioplasty started with only balloon initially. But it was found that there are high chances of reblockage after plain balloon angioplasty which was mainly due to elastic recoil of lesion and tissue growth. Problem of recoil was taken care by metallic stents.

3.2 STENTS

What are Stents?

Stents are metal springs which are crimped on balloon. They are either made of stainless steel or cobalt chromium or platinum chromium.



What are types of Stents?

Stents are either medicated or bare metal stents. Bare metal stents had higher reblockage rates to the tune of 40 % due to tissue growth hence medicated stents were invented. Medications on stents prevent tissue growth so chances of reblockage are just 2-4 %.

Which stent is good for me?

Nowadays most of the patients are put on medicated stents due to lesser reblockage rates. These stents are either manufactured in India or imported ones. Both these types of stents are approved by Indian agencies





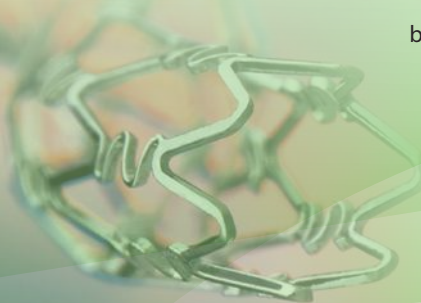
(FDA/DCGA). And in real life practice both of them perform equally well. Imported stents are tested in large number of patients and also have regulatory approvals of American FDA or European CE. There is price difference in both these stents hence option is generally given to patient to choose the stent type.

What are dissolving stents?

These stents are non-metallic stents made of polymer and coated with drug. These stents dissolve in body over years so no metal remains in body. These are already available in India. They are in their initial years of research and proven safe in many patients. Speak to your cardiologist whether they will be suitable for your blockages.

Why so much price difference in various types of stents?

Medical science is advancing at rapid rate. Since the invention of stent there has been tremendous progress in quality of stents. Newer stents are thinner, more flexible and easy to introduce in heart arteries. Also the coating on stents is getting better day by day, reducing chances of reblockage. Older generation stents are generally cheaper as compared to newer generation stents as they involve cost of patents and research. Indian stents are generally cheaper as compared to imported ones.



3.3 PATIENT QUERIES

How long will my stent last?

All stents will last lifelong. There is no need to remove stent or change stent. Every stent carries a risk of either reblockage or clot formation. To prevent clot formation inside stents you are prescribed blood thinners. These drugs are to be taken lifelong. Doctors may reduce number of tablets after one year depending on your clinical condition. Sticking to lifestyle modification, smoking cessation, diabetes and hypertension control and regular drug intake can reduce rates of reblockage to less than 1%.



Are there chances of reblockage?

All stents have definite risk of reblockage, it can be because of clot formation (1%) or can be because of tissue in growth (happens in 3-4 % of patients). Taking regular medications as advised by doctor, following life style changes can reduce this risk. Certain people like those with diabetes or smokers have more risk of restenosis. As noted in clinical practice, in properly selected patients this risk is less than 1%.

Does this procedure carry any risk?

Similar to Angiography this procedure is quiet safe. Risk mainly depends on underlying severity of disease, ejection fraction of heart, age of



patient, whether patient is having Heart Attack or not, associated conditions like kidney diseases or lung diseases. Apart from risks involved in Angiography, patient does have less than 1 % risks like inability to put stent or wire, dissection in artery requiring more stents, sudden closure of artery because of blood clots, perforation of artery , breakage of wire or balloon, rarely death. With improvement of technology, hardware and operator experience these complications have become extremely uncommon nowadays.

How many stents can be put in a given patient?

There is no limit as such on number of stents which can be put in a given patient. But generally patients requiring more than 2-3 stents are given option of bypass surgery also.

What is Adhoc Angioplasty?

Angioplasty performed in the same sitting as Angiography is called Advoc Angioplasty. It may convenient for patient to undergo procedure at one go so as avoid repeat procedure and pricks. This can be life saving in unstable patients with ongoing chest pain. Stable patients suitable for Angioplasty can also undergo same for matter of ease of procedure. But it is advisable to take cardio thoracic surgeon and cardiologist opinion for multiple blockages before proceeding for multi-vessel angioplasty.

What's Staged Angioplasty?

Some time it may not possible to take out all blockages at same sitting due condition of patient, amount of contrast required, radiation dose etc. Patient is taken up for Angioplasty at second sitting at later date (generally 2-3 days later) known as staged Angioplasty.

So above how many blocks bypass is advised?

Patients with multiple blocks can be treated with both bypass and Angioplasty. Preference to either of the procedure depends on many factors like diabetes, heart pumping capacity, associated conditions, patient preference, nature of blockage and location of blockages. There are situations where even one block in main vessel may be advised bypass and multiple blocks are advised Angioplasty. Patients with poor heart pumping and multiple blockages may be sent for additional test like MRI or PET scan. The decision of Angioplasty, bypass must be taken with consultations with cardiologist, cardio thoracic surgeon and family.

Is it true that blockages can be taken out by medicines?

Acute blockages which happen during heart attack are mainly composed of blood clot and cholesterol. Blood clots can be dissolved with medicines but cholesterol blocks cannot be reduced with medicines. Medicines do help in avoiding progression of disease.



I heard that Angioplasty or bypass is unnecessary?

Bypass and Angioplasty are life saving in patients who have multiple blockages or blockages in main vessel or patients with acute blockages due to heart attack. Research has shown Angioplasty reduces number of medicines required to control chest pain in patients having Angina. Those patients with blockage in small arteries or non major arteries can be managed without Angioplasty or bypass surgery.

Is there risk to life in these treatments?

Yes, there is minor risk to life with either drug therapy or angioplasty during heart attack but this risk is quiet lower than (<1%) risk of no treatment in heart attack.

3.4 POST ANGIOPLASTY PROCEDURE

What happens after Angioplasty?

Post Angioplasty you will be shifted to ICU for observation. You will be allowed to eat and drink one hour post procedure. Most of patients are asked to drink lot of water. If procedure is done through hand, sheath (plastic tube) will be taken out immediately post procedure. But, for patients' whose procedure is done via groin, sheath will be removed after 4 hours and you will be asked not to move limb for 6 more hours. You may ask for pot for urination during this period.

When will be I discharged?



Now a day's most of patients can be discharged on second day. Same precautions are to be taken as for Angiography (described above)

Additional blood tests will be done on second day before discharge.

What do I need to do when discharged from the hospital?

Follow instructions from your doctors and dietician. Make arrangements to have someone with you or available to help for the next few days.

How soon should I see my doctor again?

Make an appointment to see your doctor 7 to 10 days after your procedure, or sooner if your doctor recommends.

Follow-up

You should see your family doctor one week after your test or treatment. He or she will check your site and review any new medicines. You may also need to see your heart doctor. If so, we will schedule this before you leave the hospital.



4. Life after ANGIOPLASTY

Now that I've been treated, what should I be concerned about once I get home?



Take your medications on-time

Even if you feel great, take all the medications your cardiologist and primary care doctor have told you to take. It is extremely important that you take any anti-clotting medicines in the amount and as frequently as directed by your cardiologist for as long as your cardiologist says.

These medications are your primary defense against blood clots, heart attack and stroke.

DO NOT STOP taking any heart medications (especially anti-clotting or anti-platelet medications) without talking to your cardiologist first. These medications are absolutely essential for preventing Heart Attacks in the future. Your cardiologist will tell you how long you need to take them.

Report chest pain

If you have chest pain or other symptoms similar to what brought you to the hospital, report it immediately to your doctor. If the chest pain lasts more than 10 minutes, call an ambulance. If the pain seems different, but you're not sure, play it safe — call your doctor.



Check for bleeding

Keep an eye on the entry point for the procedure — your elbow, wrist or groin. You should not have ANY bleeding after you leave the hospital. If you do, stop the bleeding by applying pressure, call your doctor and return to the hospital as soon as possible.

Watch for hematomas

A hematoma is a collection of blood under the skin that might be painful. It will look like a lump under the skin. The size of the lump may vary. A lump smaller than a pecan that is not enlarging can be watched, but any lump larger than a pecan should be reported to your cardiologist. If you have a hematoma, or severe back or lower abdominal pain, call your doctor or return to the emergency room as soon as possible.



Report infection or rash

Infections are extremely rare after Angioplasty, but if you suspect infection or develop a rash of any kind, tell your doctor.

Restrict your activity

Take it easy. Ask your doctor when you can resume normal activity; including going back to work and lifting anything that weighs more than 5 Kg



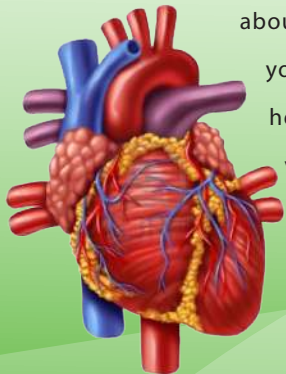
I feel great! I'm working, gardening, playing tennis, and taking long walks. Why do I need to take all these medications?

Remember, you should be making healthy lifestyle changes. These changes are important to your well being, and so are the medications prescribed by your doctor. They will reduce your risk for heart attacks and strokes in the future. The combination of medications you are taking helps to combat the hardening of the arteries (atherosclerosis) that caused your heart blockages and reduces the chance of blood clots and future heart attacks. Your cardiologist treated isolated blockages in your heart blood vessels, but other places in these blood vessels are prone to developing problems in the future.



But didn't my cardiologist fix my heart?

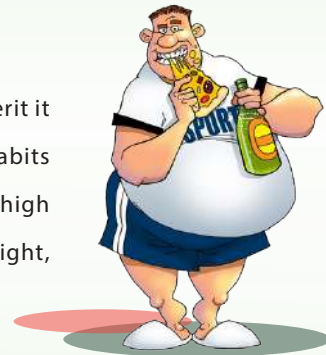
That's a very common misconception. Your heart is actually a muscle about the size of your fist that pumps blood to the rest of your body. Your cardiologist did not actually work on the heart muscle. He or she fixed blockages in the blood vessels so oxygen-rich blood can flow freely again. But, because you have athero-sclerosis, or hardening of the arteries, more places in your arteries could become blocked. Atherosclerosis affects every blood vessel in your body, which means you need medications to treat all the blood vessels in your body.



These medications reduce your risk of developing blockages in the arteries of your heart, kidneys and legs. By preventing blockages, medicines also reduce your risk of heart attack, stroke, kidney failure and poor circulation in your limbs.

What are risk factors?

Atherosclerosis is a complex disease. In part, we inherit it from our families, but certain individual traits and habits called risk factors make it worse — for example, high blood pressure, not enough exercise, being overweight, diabetes, high cholesterol and smoking.



Why is my diet so important?

The good news about heart disease is that you have the ability to slow its progress by making changes. Diet is one of those changes. Talk to your dietician or doctor about changing your diet to reduce your risk of having a Heart Attack or stroke.

What about exercise?

Your doctor will probably allow you to resume your usual activities within a few days after your procedure. He or she may also encourage you to participate in a cardiac rehabilitation program that includes exercise testing, counseling, and starting an exercise routine that is right for you. If you have chest pain, difficulty in breathing or an irregular heartbeat during exercise, stop until you feel better. If these problems continue, seek help.



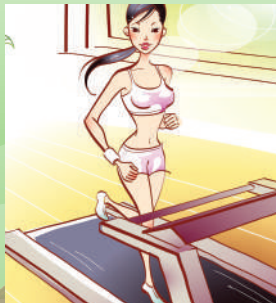


How soon can I have sex?

Sex is like exercise — the same rules apply. When the doctor tells you it's okay to climb stairs or jog again, it's probably okay to have sex with your partner. But don't be embarrassed to ask your doctor about it. It's a very common concern after this procedure. Do not take medications like Viagra for erectile dysfunction (ED) without first discussing it with your cardiologist. These medications can create dangerous interactions with the medications you may be taking to treat your heart problem.

What are my risks for more serious heart disease problems?

As someone with heart disease, you are at higher risk than the general population for having chest pain or Heart Attack. Taking your medicines, exercising, and eating right will help to reduce your risk for more chest pain and Heart Attack in the future.



If I follow all these guidelines, will I be able to do everything I want to do?

In general, yes. But it depends on how sick you are. If you have had a Heart Attack, you might not be able to do everything you want right away, but you will most likely feel better after the Angioplasty procedure. If you had Angioplasty to relieve chest pain that wasn't responding to medication, you can expect some improvement in how you feel and what you can do.

Where do I go from here?

Go easy on yourself. You have taken a big step toward recovery by having this procedure, but your life is different now. Try not to get depressed. Depression creates stress and stress puts you at greater risk for more problems with your heart and health in general. If you do feel anxious or depressed, ask for help.

People often feel that way after a Heart Attack or after procedures like Angioplasty or surgery. There's no reason to suffer in silence.



5. General Guidelines to prevent HEART DISEASE

Understanding the Risk Factors of Heart Disease

Most of the patients are worried about the recurrence of the disease. Will this happen again is the question unsettling them. Definitely once the disease has struck you; there are more chances than average that it will recur again. When my patients ask me this question that once Angioplasty or bypass is done will I be fine lifelong? Why should I take medicines lifelong if you have taken out blocks??

Cardiologist or surgeon is just taking immediate care of your blocks. We are not taking care of process of cholesterol deposition in heart vessels or any other vessel (Atherosclerosis). If you do not change your lifestyle or take medicines, this process will continue and blocks will recur. It is like a cleaned clogged gutter which will flow till the time again it gets clogged because of added garbage. We have cleaned your arteries now it is up to you to keep it clean.

So next question will be how do I do that??

First **understand the risk factors for heart disease.**

- Smoking or Tobacco in any form (Raw tobacco, Mawa, Guthaka, Beedi, Cigarette)
- Diabetes
- Hypertension
- Age
- Male Sex



- Family History of heart disease
- Raised Cholesterol Levels
- Moderate Alcohol intake (Negative Risk Factor)
- Fresh Fruit and nuts (Negative Risk Factor)
- Physical Exercise (Negative Risk Factor)



Out of this age, sex and family history are non modifiable risk factors which you cannot change.

But other factors are modifiable which you can control. Research has shown you can prevent heart disease 90 % of time by controlling these factors.



Smoking Cessation

Smoking is preventable cause of cardiovascular mortality. About half of the people who don't quit smoking will die of smoking related illnesses. In India we see a lot of young patients with severe heart attacks because of smoking or

guthka. Typically these patients have minimal cholesterol deposits in the heart vessels. They have increased tendency of clot formation in blood. Once you stop tobacco or smoking your risk of heart disease and cancer goes down every year.

Quitting might not be easy. Once you quit smoking, you may difficulties initially which can be coped with the help of your doctor. But once this



period is over you will soon start feeling better, your blood pressure will come down, your appetite will improve. Not only you but your peers also should help you in quitting.

Diabetes

Diabetes is itself considered as cardiovascular disease. Patients with diabetes are at very high risk of heart disease. Hence these patients are advised not only to control sugars but also to keep their blood pressures low and cholesterol in check. It is preferable to keep Glycoslated Hb below 7 with the help of medicines or insulin.



Blood Pressure

Many patients with high blood pressure have no symptoms; they invariably ask me why should I take medicines if I have no problem. High blood pressure is treated to prevent future problems like kidney disease, heart disease, paralysis and heart failure. Your doctor will help you in controlling your pressure. Once blood pressure tablet is started you can have frequent checkups so as to keep blood pressure reading below 140/90 mm of Hg.



Raised cholesterol levels

Your lipid profile contains various parameters like LDL cholesterol, HDL cholesterol, Triglycerides. LDL cholesterol is bad cholesterol which pushes cholesterol into heart vessel whereas HDL is good cholesterol which takes away cholesterol from vessel wall. Triglycerides cause reduction in good cholesterol.

Not only diet is important but also essential is managing your cholesterol levels.(Discussed Later). Last two decades of research has resulted in understanding importance of medicines to reduce cholesterol and prevent heart disease.



All patients with heart disease and heart blockages are put on anti cholesterol medicine called statins. Dosage of the drug may vary according to your disease, cholesterol levels. New guidelines from American College of Cardiology recommend this drug to all diabetes patients and patients who are at high risk for heart disease even if they do not have heart disease presently. Your doctors will advice these drugs as per your reports and clinical condition.



LIFESTYLE MODIFICATIONS

This is most important area but often neglected by busy doctors. Your disease has occurred because of faulty lifestyle most of the time. Diabetes, high blood pressure, raised cholesterol arise from your lifestyle. When I ask my patients about their lifestyle, they find nothing wrong in it. A small exercise of writing your daily schedule like when you wake up, how much you walk, what and when you eat, how much you drive, your work and family stress will help you appraise your lifestyle.

LIFESTYLE APPRAISAL CHART

Wake up Time

What do I Eat and when

Break fast – Time

Lunch

Evening

Dinner

Any other snacks or food in a day

Beverages

Tea

Coffee

Cold drinks

Fruit Juices

Hard Drinks and What and frequency

Sweets

How many times in a week and what



Fresh Fruits Intake - Daily/ Often in week/ rarely/ none

Non-Veg - Chicken/Red Meat/ Sea food

Frequency

Smoking/ Tobacco- Yes/No

Frequency – Number per day

Exercise – Nil/ Planned/Unplanned

Walking/running/jogging/swimming

Gym – Weight Training

Frequency per week

Stress – Work/Home/Driving / any other

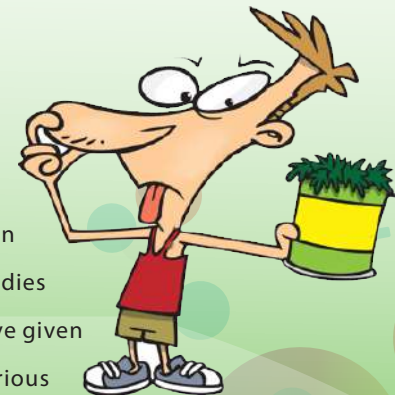
Change your lifestyle with Diet , Exercise , Meditation



DIET

What should I eat?

This is the most frequently asked question to us by patients. Unfortunately there is no clear cut answer to this question. Dietary habits change from culture to culture, between religions, casts and regions. Most of the studies and data arise from western literature and have given conflicting answers to common questions. Various cardiology and dietary associations have given guidelines for diet in heart patients. But for implementation of these guidelines you need to understand regional diets and food availability.





Intake of saturated fat was linked to heart disease in 1960 by a study in 1960 (Ansel Keys Seven Nation Study). Since then, it is advised to reduce intake saturated fats to less than 10 % in your diet. You were advised to increase intake of Polyunsaturated fats (PUFA) in your diet instead. This theory is recently been questioned and a second theory saying natural origin saturated fats in, butter , cheese, bacon, meat and egg may not be bad for you. So among these conflicting data what should you follow?

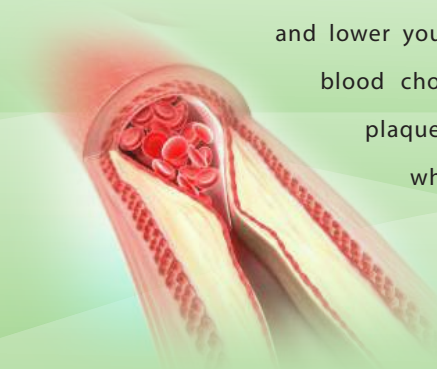
First do not get obsessed over individual kind of food; no single food item makes you healthy or diseased. It is more important to follow overall dietary pattern.

Follow Simple Rules in Diet

- Eat on time
- Eat all meals (Breakfast, lunch evening snack , dinner) you may take additional fruits or milk at mid morning (10 Am)and late night (10 Pm)
- How much you eat is just as important as what you eat. Overloading your plate taking seconds and eating until you feel stuffed can lead to eating more calories, fat and cholesterol than you should. If you are overweight do cut on calories by reducing portions gradually. Eat two chapattis instead of three, or reduce portion of rice what you eat



- Don't Start your day with tea or coffee, instead eat a fruit or nuts (Almonds/walnuts)
- Eat more vegetables and fruits Vegetables and fruits are also low in calories and rich in dietary fiber. Vegetables and fruits contain substances found in plants that may help prevent cardiovascular disease. Eating more fruits and vegetables may help you eat less high-fat foods, such as meat, cheese and snack foods
- Eat whole grain over refined atta (maida). Whole grains are good sources of fiber and other nutrients that play a role in regulating blood pressure and heart health. You can increase the amount of whole grains in a heart-healthy diet by making simple substitutions for refined grain products
- Limit Unhealthy fats. Limiting how much saturated and Trans-fats you eat is an important step to reduce your blood cholesterol and lower your risk of coronary artery disease. A high blood cholesterol level can lead to a buildup of plaques in your arteries, called atherosclerosis, which can increase your risk of heart attack and stroke. Choose oils which contain more mono-saturated and unsaturated fats like

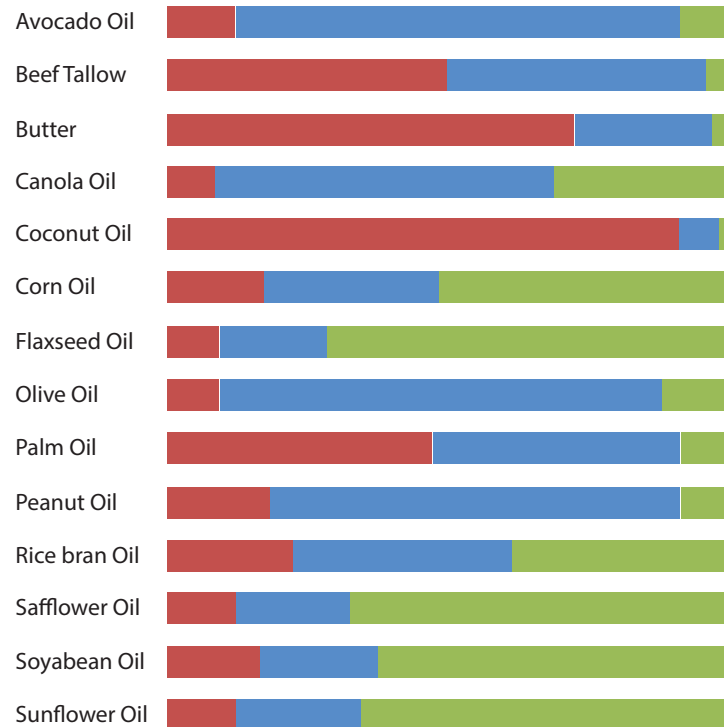




Peanut oil, Rice bran oil. Even though olive oil is good, it is not good oil for Indian type of cooking as it has low smoke point. It is good oil for salad dressing, oven cooking, and medium temp cooking. Most important thing is quantity of oil should be less whichever oil you use.

Fat type %

■ Saturated
 ■ Monounsaturated
 ■ Polyunsaturated



List of Unhealthy Snacks, foods, drinks

1. Samosa, medu wada, sabudana wada, pattice, chhole bhatura, batata wada, kachori, bhujiya, chakali, fafda, jalebi
2. French Fries, Chips, Kurkure, Toasts (Factory packed), Khari, Most of biscuits, popcorns
3. Cookies, Cake
4. All cold drinks contain very high amount of sugar and calories and should be avoided. Even diet drinks are not good for health. Avoid Milk shakes
5. Avoid Mac Donald's, Burger king and KFC , pizza hut kind of fast food
6. Avoid packaged cereal breakfasts like Cornflakes(Kellogs)
7. Avoid Ice creams , and Indian Sweets like jalebi, pedha, kajukatli, gulab jamun
8. Avoid excess tea or coffee





Eat More	Eat Less
Healthy fats: raw nuts, olive oil, fish oils, flax seeds,(Alsi/-Jawas) or avocados	Trans fats from partially hydrogenated or deep-fried foods; saturated fats from whole-fat dairy or red meat
Nutrients: colorful fruits and vegetables—fresh or frozen, prepared without butter	Packaged foods of any kind, especially those high in sodium
Fiber: oats, brown breads, and pasta made from whole grains or legumes	White or egg breads, granola-type cereals, refined pastas or rice, Corn flakes
Omega 3 and protein: fish and shellfish, poultry	Red meat, bacon, sausage, fried chicken
Calcium and protein: Egg whites, egg substitutes, skim or 1% milk, low-fat or nonfat cheeses or yogurt	Egg yolks, whole or 2 percent milk, whole milk products like cheese or yogurt

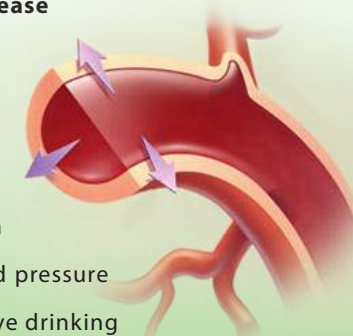
Type of fat	Recommendation
Saturated fat	Less than 7% of your total daily calories, or less than 14 g of saturated fat if you follow a 2,000-calorie-a-day diet
Trans fat	Less than 1% of your total daily calories, or less than 2 g of trans fat if you follow a 2,000-calorie-a-day diet
Cholesterol	Less than 300 mg a day for healthy adults; less than 200 mg a day for adults with high levels of LDL ("bad") cholesterol or those who are taking cholesterol-lowering medication

Recommendation for intake of Alcohol

Long-term, heavy drinking can lead to heart disease

- Increase the risk of **high blood pressure**.

Drinking excessive amounts of alcohol causes raised blood pressure which is one of the most important risk factors for having a heart attack or a stroke. Increases in your blood pressure can also be caused by weight gain from excessive drinking



- Heavy drinking weakens the heart muscle, which means the heart can't pump blood as efficiently. It's known as cardiomyopathy and can cause premature death, usually through heart failure. The heart may be enlarged



Binge drinking can make your heart beat irregularly

The name Holiday Heart Syndrome was coined in 1978 (but it is misleading). People who have it certainly won't be having a leisurely time. In fact they might feel like they are having a heart attack – characterised by severe pain in the centre of the chest. It gets its name because cases of the condition tend to increase around holiday times or after weekends, when people tend to drink more.

Holiday Heart Syndrome tends to come on after episodes of heavy drinking – usually at least 15 units (about seven and a half pints of 4% beer or one and a half bottles of 13% wine). If this happens, your heart starts to beat irregularly making you feel breathless. Your blood pressure changes, increasing your risk of a heart attack and sudden death.

Alcohol can have protective benefits for the heart – but only if you drink within the daily unit guidelines and are over 45

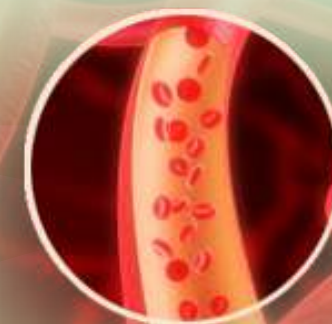
If you drink alcohol, do so in moderation. This means an average of one to two drinks per day for men and one drink per day for women. (A drink is one , 4 oz. of wine, 1.5 oz. of 80-proof spirits, or 1 oz. of 100-proof spirits.)



Research suggests that small amounts of alcohol can have a protective effect on your heart. This benefit appears to be restricted to over 45-year-olds drinking well within the lower risk guidelines.

Scientists aren't sure how alcohol has the protective effect but think there are two main mechanisms:

1. Preventing artery damage. Alcohol appears to increase the level of 'good' cholesterol (HDL) in the blood. This reduces the amount of fatty deposit (atheroma) which narrows our arteries and makes them more likely to clog.
2. Preventing blood clots ('thrombosis'). Alcohol can help prevent the formation of blood clots which can close off the arteries, causing a heart attack. It reduces the stickiness of platelets so they are less ready to clump together to form clots. Small amounts of alcohol with a meal can reduce the sudden rise of a protein (fibrinogen) produced by the liver, which is involved in clot formation.





Can alcohol ever be good for the heart?

More research is needed to show whether drinking red wine is “good for the heart”

Laboratory studies in animals suggest that antioxidants help to prevent thrombosis.

Red wine has a high concentration of antioxidant substances called flavonoids. White alcoholic drinks, like vodka

and cider, contain the least concentration of

flavonoids. But other alcohols, such as beer, have

nearly the same antioxidant effect as wine.

Much of the interest in red wine comes from the observation that the French (who have a long tradition of drinking red wine) often have healthy hearts and arteries despite typically having high-fat foods in their diet. But studies show that people who drink wine over other types of alcohol tend to live healthier lives, smoking less, drinking less and having a healthier diet. So these other factors, rather than the red wine, may in fact be responsible for their good health.



It's not a good idea to start drinking alcohol to protect yourself against heart disease

Simply put, it's just not worth it. With alcohol and the heart, it's a benefit and risk trade off. So, for example, alcohol's anti-clotting ability,

potentially protective against heart attack, may increase the risk of haemorrhagic stroke (when a blood vessel bursts inside the brain), or bleeding within the brain. Beyond the daily unit guidelines, alcohol's potential benefits on the heart are outweighed by its increased risks of developing other illnesses, such as liver disease or cancer.

In nut shell , if you are regular drinker , you may continue in moderation as adviced above, but if you are not then please don't start drinking to prevent heart disease.

Physical Activity

Physical inactivity greatly increases your risk of developing heart disease. Getting regular physical activity is an especially important part of your healthy heart program, because physical activity both directly reduces your heart disease risk and reduces your chances of developing other risk factors for heart disease. For example, regular physical activity may reduce LDL (bad) cholesterol, increase HDL (good) cholesterol, and lower high blood pressure. It can also protect your heart by helping to prevent and control diabetes. Finally, physical activity can help you to lose excess weight or stay at your desirable weight, which will also help to lower your risk of heart disease.





How frequent and how much?

- Be sustained in the long term.
- Be regular, i.e at least 4-5 days per week.
- Last for about 30 minutes
- Be of mild-to-moderate intensity, ie enough to make people feel warm and out of breath, but not so vigorous as to cause extreme breathlessness.

AHA Recommendation

For Overall Cardiovascular Health:

- At least 30 minutes of moderate-intensity aerobic activity at least 5 days per week for a total of 150
- OR
- At least 25 minutes of vigorous aerobic activity at least 3 days per week for a total of 75 minutes; or a combination of moderate- and vigorous-intensity aerobic activity

AND

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



For Lowering Blood Pressure and Cholesterol

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

What exercise



Moderate Physical Activity	Calories Burned per Hour
Hiking	370
Light gardening/yard work	330
Dancing	330
Golf (Walking and carrying clubs)	330
Bicycling (Less than 10 mph)	290
Walking (3.5 mph)	280
Weight lifting (Light workout)	220
Stretching	180
Vigorous Physical Activity	Calories Burned per Hour
Running/jogging	590
Bicycling (More than 10 mph)	590
Swimming (Slow freestyle laps)	510
Aerobics	480
Walking (4.5 mph)	460
Heavy yard work (Chopping wood, for example)	440
Weight lifting (Vigorous workout)	440
Basketball (Vigorous)	440

Source : Adapted from the 2005 Dietary Guidelines Advisor Committee Report





Some Useful Tips

- 1 Some activity is always better than none
- 2 Dont delay, start slow at convenient time for you rather than keeping an unrealistic goal.(like every day 5.00 am being unrealistic goal for most)
- 3 Concentrate on time spend on exercise like walking, cycling or jogging, swimming rather than distance covered.
- 4 Gradually build up time
- 5 Some forms of stretching exercises are always useful



- 6 Dont push yourself if you get symptoms of chest pain, breathlessness, undue fatigue, severe palpitations. (especially those who have undergone angioplasty or CABG)



- 7 Develop habit of inculcating exercise in daily routine like walking short distances, taking stairs rather than lift.
- 8 Walking, running, jogging, roping, swimming, cycling, dancing, playing tennis or badminton are examples of aerobic exercises.
- 9 Weightlifting generally not recommended for heart patients, if you pursue that please consult your doctor.
- 10 Yoga and other breathing exercises do have added benefits on heart disease, but should be done under supervision from experts

These recommendations are for who have not suffered heart disease or heart attack. Get individual exercise prescription from your doctor for those with heart disease

Prevention of heart disease in nutshell

- 1 Dont Smoke or chew tobacco
- 2 Exercise for 30 minutes on most days of the week
- 3 Eat heart Healthy diet
- 4 Maintain your body weight
- 5 Get quality sleep
- 6 Get regular health screening
 - Check BP annually
 - Get you cholesterol checked from the age of 35
 - Get your blood sugars checked every 2 years



DOS AND DONT'S

- Stop Smoking or use of tobacco in any form. Every cigarette you smoke steals 4 mins of your life of a normal person and more from a person with diseased heart
- Alcohol- It contains empty calories with no nutritional value. By drinking alcohol you unnecessary loading your body with calories. So cut down on alcohol

Diet

- Follow simple rules
- Do not skip you meals
- Take plenty of fresh fruits and vegetables



DR. SHANTANU DESHPANDE

Dr. Shantanu Deshpande is an Interventional and consultant cardiologist practicing at Chembur and Thane specializing in complex angioplasties, pediatric and valvular interventions which includes device closure of ASD, VSD and PDA. He currently practices at Just Care Heart Clinic, Chembur and Dr. Godbole Hospital, Thane. He is attached to Dr. D. Y. Patil Medical College as Associate Professor.



Awards & Recognitions

- Awarded Outstanding Young Person Award at Zonal, state and National Level by Junior Chamber International
- Awarded Fellowship of European Society of Cardiology for his outstanding contribution to Cardiology
- First in the University of Mumbai in M.D. (General Medicine) Examination held in Aug 1999
- Stood Second in University in DM (Cardiology) examination held in Aug 2003
- Awarded Gold Medal in DNB (Cardiology) examination held in Sept 2003

Other Achievements

- Trained in performing Complex Angioplasties at Toyohashi Heart Institute Tokyo, Japan
- He has many national and international publications to his credit.
- He had the honor of presenting many papers at National and International Cardiology Conferences.
- He has performed more than 5000 Angioplasties. He is an expert in performing complex angioplasties. He has also performed many Pediatric and Valvular Interventions which includes device closure of ASD, VSD and PDA.

