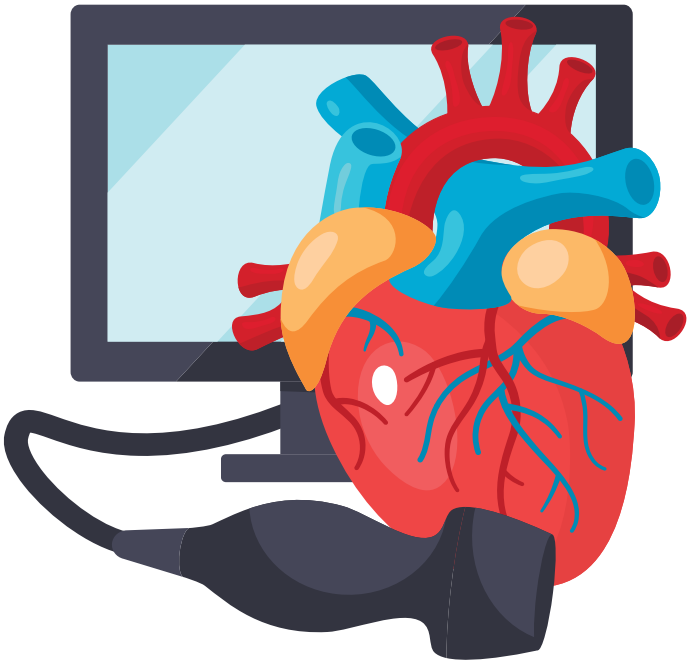
ADD 15 YEARS TO OUR LIFE
CAN WE? OF COURSE, WE CAN!!

Add 15 Years |

Rs.1000/$300 2D Echo (Ultrasound) of Heart

1 of 3 Simple Noninvasive Heart Tests
Can Add 15-30 Years to Our Life

USA/India Edition 2021 | ENGLISH



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DM/Fellowship, USA

PREFACE

Think About It!

Let me give an example which all of us can identify with

Say, If we have to study for the complete year, all our subjects in the school and suppose we never really opened our books and missed so many classes, never paid attention in class.
Then surely we cannot be in the top 25% of the class, chances are, we will fail that class.

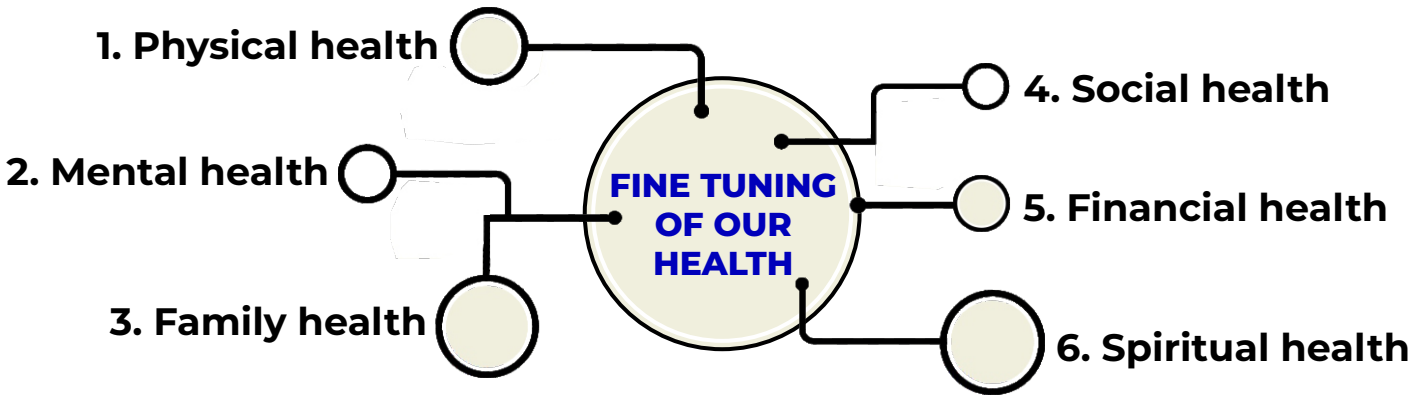
Miracles do not happen in real life.

Atleast in India (Not very common in U.S.) we seek care & M.D./ Physicians provide care and their focus is on so called "alarming symptoms" (we call it "crisis medicine")

Personally in 2020 and in coming years, those "alarming symptoms" (called "Crisis Medicine") should be RARE before we get into 75 to 85 years of age group.

PROVIDED

We keep fine tuning our health (medical definition) and gain insight about fundamental medical knowledge, we actively plan and pay attention to our:



TRUST ME ALL THE 6 TYPES OF HEALTH ARE IMPORTANT

Results will be dramatic.

DISCLAIMER

In all the books that I am writing as physician and a M.D. with a lifetime of experience (along with my team) –

I have mention the most common medical facts which each one of us need to know in our day to day life.

Ignorance is never a blessing and 2020 has shown us that.

I highly recommend that anybody entering middle school (8th grade i.e. a 13-year-old) should start reading these books and try to read as many as he or she can **so that they can get an insight into the most common medical facts.**

These books are written in basic English, Spanish, Hindi, Bengali and several other languages as well.

If we get an insight into medical facts before we get into chain-smoking and excessive alcohol use or another drug abuse, then ultimately, we can live a healthy and a long life.

All my research and common sense says that starting at the age of 13 years, (that is when we enter our teenage years, our personality, our habits, our likings and our disliking -- all are pretty much shaped by the time we get to 26 years old or older.

Both India and USA are very dear to me,

In the former I was born; I have my parents.
In the latter, I have my wife and my children.

One thing became obvious to me as I live in USA, that the population is taking advantage of the latest medical advances.

Our Indian community, all our friends and families, when we have medical issues, are really putting themselves at the mercies of government and private hospitals, and doctors (with "zero" trust).

In India, people have to spend their own money.

Realizing this, I have provided all the medical information which is available to us doctors, so that one can make wise choices and confidently take their health in their own hands.

But still I sincerely request that you should not take any medications without the supervision of your own family doctors.

The facts I have provided in my books, is available in every medical book, but I write them in simple English or in your language *because how are you going to make right choices in relation to your health, if you do know what the answer is.*

Our horoscope/stars are not enough, and consulting a pandit, priest or mullah is not enough. Blind faith is not enough.

Prayers help, yes! When we do not know the answer to a situation. If our car ran out of petrol, our car will not move (how much so ever we may pray, it is not going to happen).

If you anticipate and choose wisely, you will not have a crisis. So our disclaimer is we give you that insight but Please always consult your physicians before starting on any prescription medications.

DESCRIPTION

1. As they say, you are as young as your heart! This book brings out the important heart tests one must take to add 15 years to life.

2. What is Echocardiogram? Why is it an important heart test?

3. The book gives basic details about the heart structure and the blood flow in our body.

4. The author includes other heart tests which can be undertaken to ensure a healthy heart and thus a healthy body!

5. The book gives an insight into why Echocardiogram is so cool and why is should be undertaken starting age 30?

6. The book also points out the costs of heart tests.

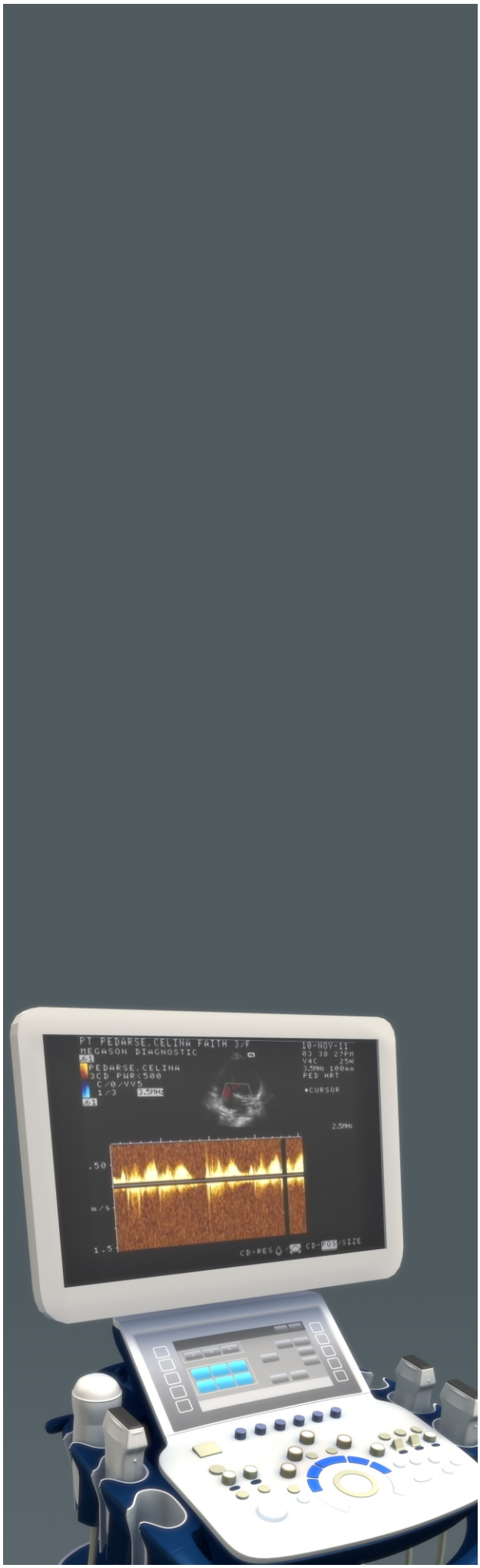


TABLE OF CONTENT

Chapter 1

Introduction

Think About It!

In school or colleges, we have to study all our subjects for the entire year, and if we never really opened our books, missed so many classes and never paid attention, then

We cannot be in top 25% of the class.

Miracles do not happen in real life.

Once again, I need to tell that your life is a very slow process.

Things do not go wrong in one day.

It takes years and years and life happen slowly.

Every books' focus is how to medically stay healthy,

In India USA and all over world.

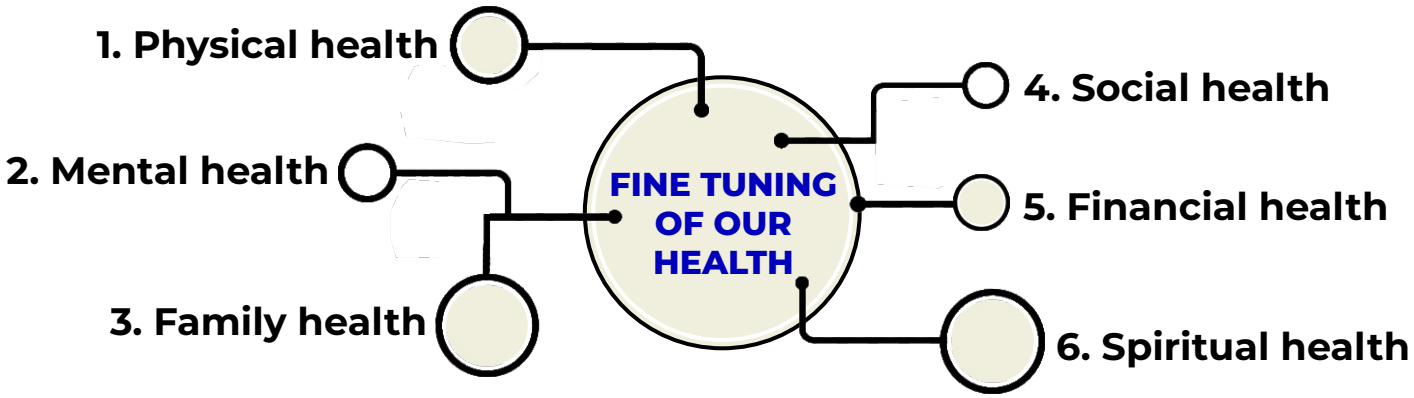
Medical principles are universal.

Most of the time, at least in India the doctors/MDs/even community is used to crisis medicine to **provide care/seek care** when we have alarming symptoms.

Personally in 2020 and in coming years, those alarming symptoms should be rare before we get to 75 years to 85 years of age group.

PROVIDED

We keep fine tuning our health (medical definition) and gain insight about fundamental medical knowledge, and we actively plan and pay attention to our:



TRUST ME,

THE RESULTS WILL BE DRAMATIC.

Medically and statistically heart is our lifeline.

Only heart can make us lose our life in 5 minutes,

Or, if we intervene in timely fashion, instead of losing our life in 5 minutes, we can add 15 to 30 years to life (with all the advanced knowledge and technology in 2020).

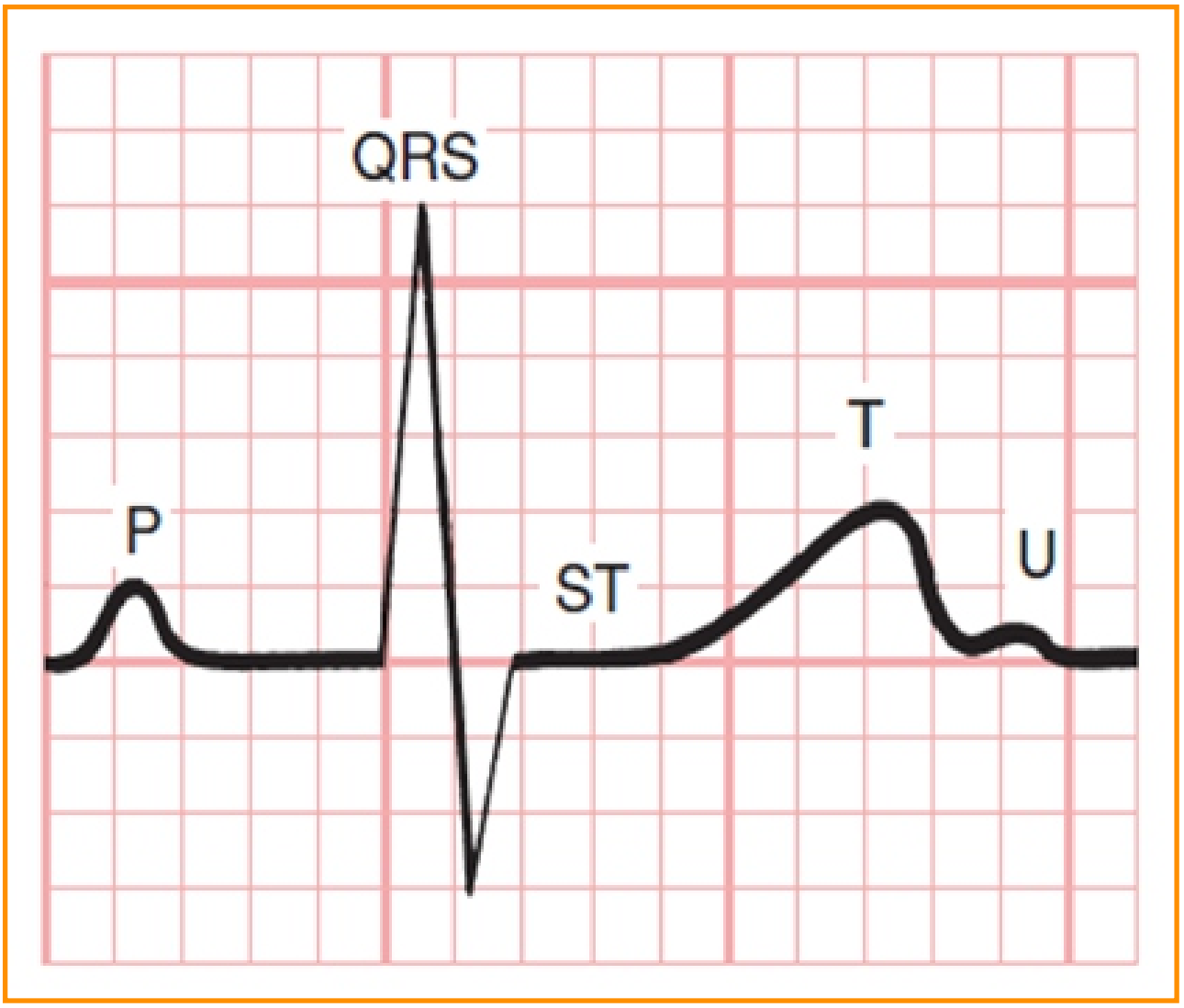
There are three relatively very simple and non-invasive tests unlike cardiac catherization (mostly done as emergency where we place a catheter/wire inside the patient's body from the groin to all the way up to the heart.

Simple tests, yes, but the knowledge they give us make the difference between life and death.

Chapter 1.1

ECG

First, let us talk about the **ECG test** with which we check the electrical conductivity of the heart.



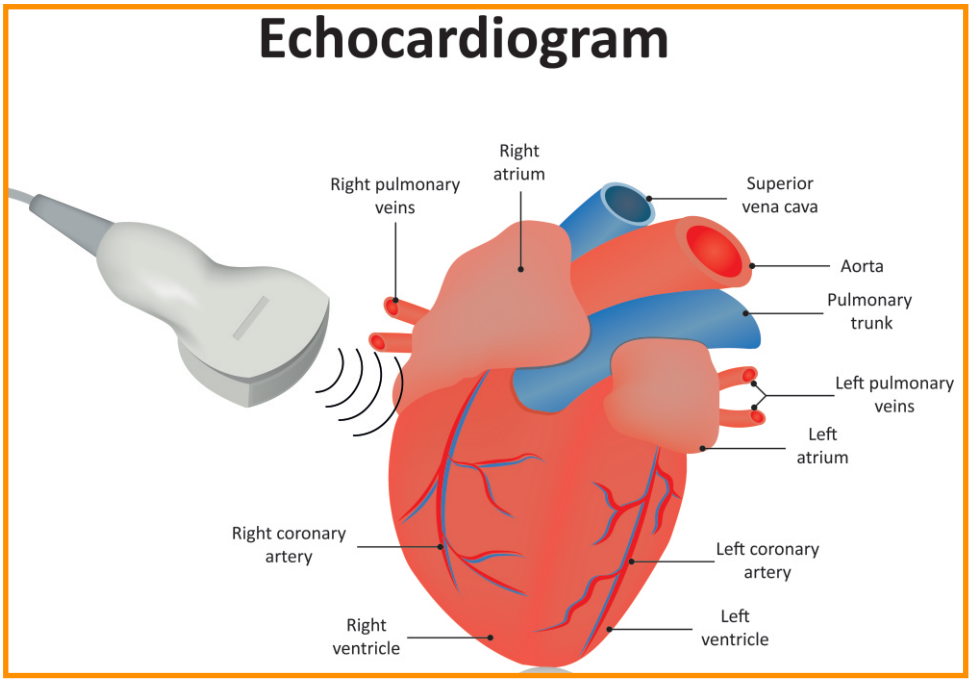
Chap1Fig1

Chapter 1.2

Echocardiogram

Secondly, we do the ultrasound of the heart or **Echocardiogram** which tells us about:

- The functioning of the heart muscles, and
- The functioning of the heart valves as the valves allow blood flow only in one direction.



Chap1Fig2

2D-Echocardiogram provides very important information. It tells us that:

- The valves are functioning well.
- The atria and ventricle are contracting well, and
- They are pushing enough blood to our body.

Chapter 1.3

CT Angiogram

The third test of the heart is **CT Angiogram** which is equally important as it tells us about the blood supply of the heart.

For heart to function every minute of the day, 24 hours a day, it needs food and oxygen, and heart has its own blood supply which provides both.

In CT angiogram, our focus is on the three arteries of the heart, which supply food and oxygen to the heart.

Chap1Fig3

And the combination of all three, information from all three tests (i.e. 2D Echocardiogram, ECG and CT Angiography) gives us almost close to 100% information.

If these are all normal, then we cannot have a heart attack for the next five years and we can wait for 5 years, to repeat these tests, every 5 years.

Chapter 2

We Do Need These 3 Cost Effective Tests for the Heart

Think About It!

With the dramatic increase in the medical knowledge and technology, now we have controlled most of the infectious conditions which used to take our life away within days.

Yes, today we have (lifelong) so called chronic medical conditions like "diabetes" and " hypertension".

But if we manage them well, we can really live healthy life till 85 to 90 years. To be honest, if we have none of those conditions, then our life should be about 120 years.

As we approach our wonder years, the two biggest thing that should make us worry are heart attack and cancer. Yes, they sound very scary. And they are scary if we just do nothing about them or we just go through our life.

Yes, it is a scary if we just wait for heart attack to happen or cancer affecting us. But it does not have to happen that way in 2020.

We have very cost effective, simple, noninvasive three tests of the heart which can give us all the information about the heart and if they are all normal, then there is no way we can have a heart attack over next five years.

And if they are not normal, then we can always do medical intervention which can easily add 15 to 30 years to our life, at least nothing going to happen to us suddenly.

Same thing applies to cancer also. Now, statistically, we doctors have collected enough information where we can anticipate that such cancer happens at such age and we can screen us for those cancers. Any cancer in stage 1is 100% curable.

All the studies have shown that 70% blockage of heart arteries is the critical number.

What it means is when our coronary artery is 70% stenosed, then it

significantly decreases the flow to that part of the heart muscle which it supplies.

And any time we need to stress our heart like we do out of our routine suppose we have to run suddenly; we have to climb a tree suddenly or when you are driving a car and out of our petrol and then we have to walk like 10 km and at that time our heart is very stressed, and it can push over 70% blockage over the edge, and we may have a heart attack.

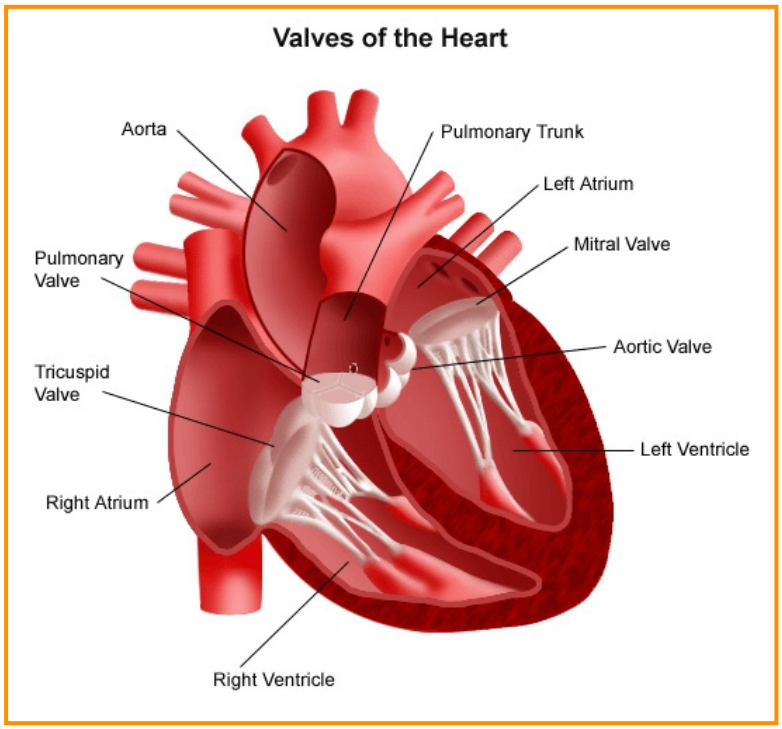
So, it is very important that we anticipate.

We have a heart attack and if heart is not able to pump blood for 5 minutes to our brain, we are gone.

I can tell you these three tests are very cost effective every five years

They are going to cost you Rs. 200, Rs. 800, and Rs. 10,000.

Test Name	Cost (In INR)	Cost (In Dollars)
ECG	Rs.150-Rs.300	$50-$80
2D Echocardiogram	Rs.1500-Rs2000	$1000-$3000
CT Angiogram	Rs.8000-Rs.10000	$350-$900



Chap2Fig1

Most importantly, these are non-invasive tests. Any non-invasive test is always less costly than the invasive test.

Invasive test needs much more skill, it is much more complex and most of the time, it is done in emergencies and it is much more costly absolutely.

At the age of 30 years, every 5 years, if no emergency exists:

- I can **take a vacation**

I can take a vacation.

- I can **approach the best cardiologist I trust**

I can approach the best cardiologist I trust

- Also, I can **negotiate with the insurance company.**

Also, I can negotiate with the insurance company.

- Or I can **save money for the procedure**

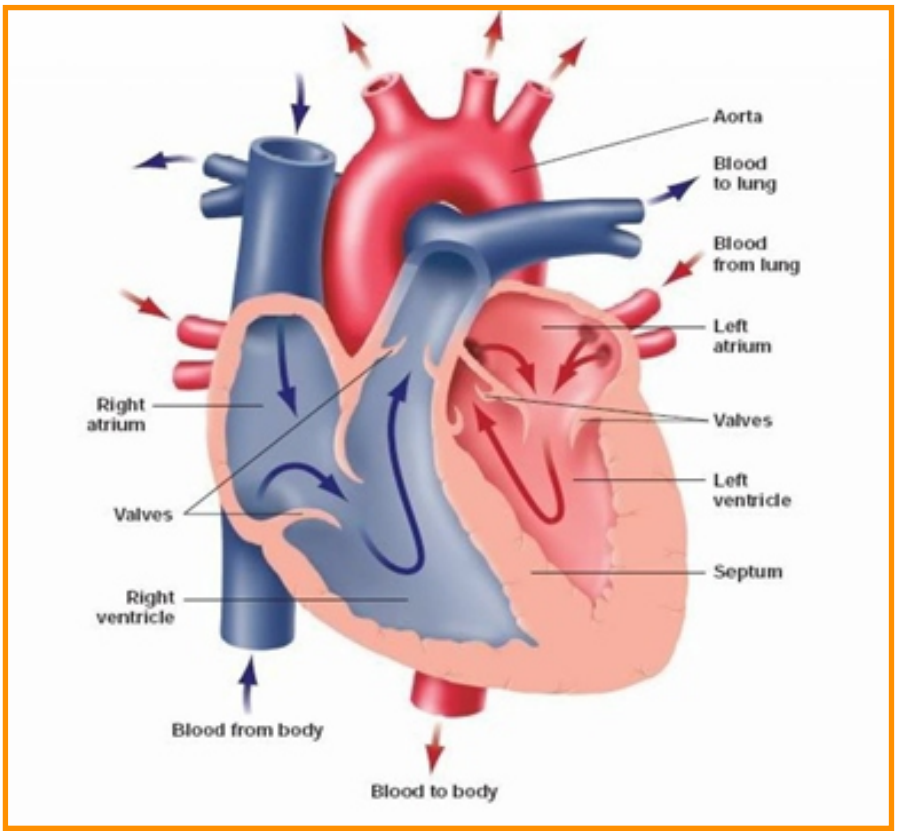
Or I can save money for the procedure

- Or I can **make changes in my lifestyle**

Or I can make changes in my lifestyle

- I may **stop smoking** once if I know my arteries are becoming more blocked

I may stop smoking



Chap2Fig2

- I may start myself on **Statin** which can actually, reverse blockage minimizing or dramatically decreasing our low-density lipoprotein, which is a bad cholesterol, and which is a sticky cholesterol.

I may start myself on Statin.

Chap2Fig3

All these steps should obviously be taken in consultation with our physician.

Chapter 3

There Are So Many Facts Very Unique About Our Heart!

Think About It!

What is important to remember is that the most important action of the heart is to pump blood to the brain.

If there is no pumping of blood to the brain, then we are gone in 5 minutes.

Yes, body will be alive, but we are gone.

There are so many unique facts about our heart:

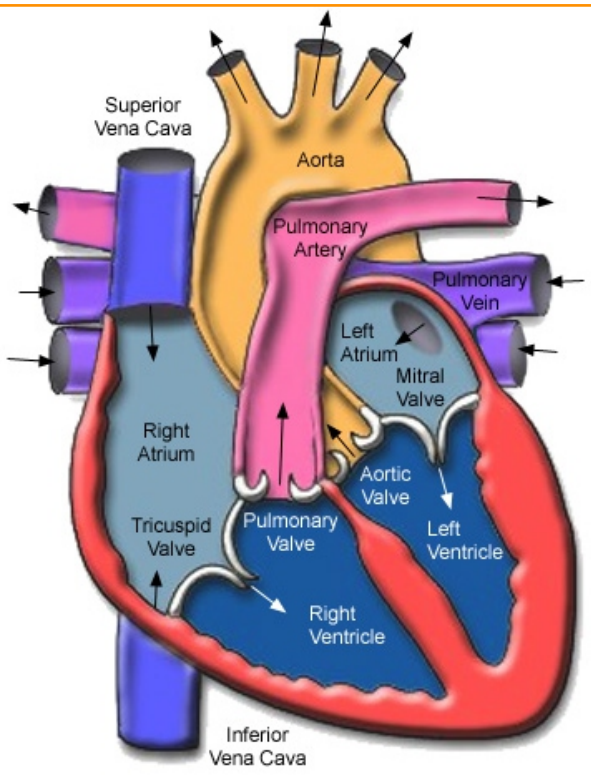
1. It is 100% muscle in shape of heart.

2. It can beat on its own outside the body and that is how we can do heart transplant (heart keeps beating outside our body).

3. Heart rate and pumping action is actually controlled by the electrical switches **(two electrical switches in the heart).**

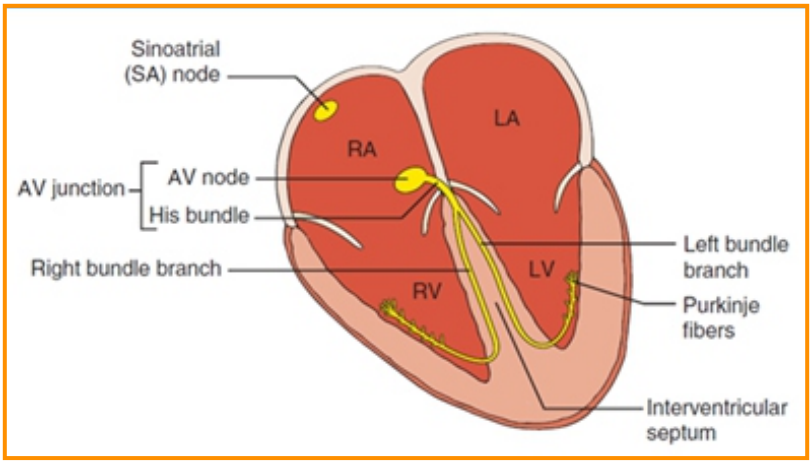
4. Every part of the **heart is fully wired conducting electricity.**

5. There is a **method and rhythm** to the pump action.



Chap3Fig1

6. Then, **there is method to the electrical conductivity** and electrical switch turns on and turn off setting the rate at which heart pumps (usually 70 beats per minute).



Chap3Fig2

7. Also, electricity goes in one direction along the pathway.

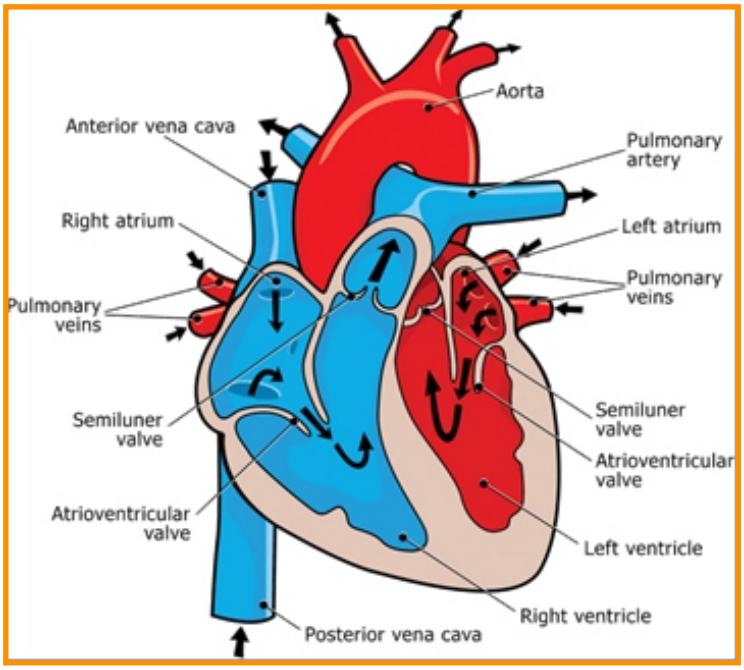
8. Blood in heart chambers also always flows in one direction.

9. Everything is one way.

10. The blood is collected from the body and it goes to right side of the heart.

11. The **right-side** pumps to the lung for exchange of oxygen and carbon dioxide.

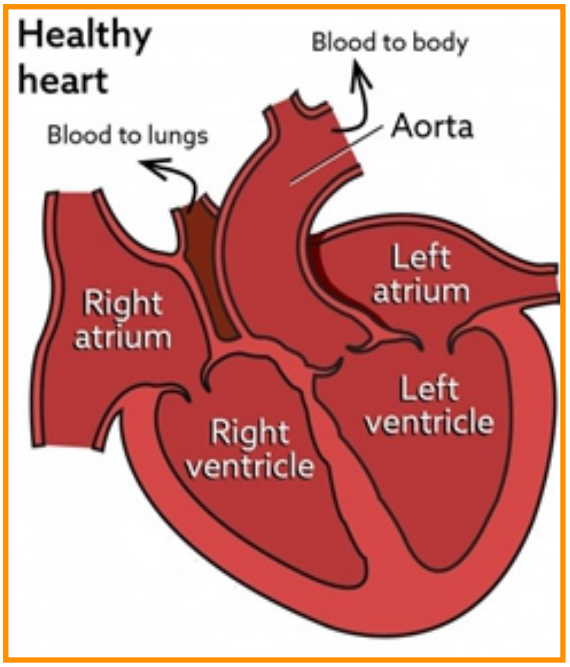
12. And, from lungs blood **comes back to the left side of the heart and left side of the heart then pumps blood to every part of our body.**



Chap3Fig3

Chapter 4

2D Echocardiogram- A Medical Term For Ultrasound of the Heart



Chap4Fig1

Think About It!

Everybody knows about ultrasound. It is used during pregnancy to follow the progress and health of the baby.

It uses sound waves to produce the images.

It is very safe, and it gives us very useful information

Think About It!

The time is coming when all our new graduating doctors will have handheld echocardiogram connected with our cell phone and when we do the echocardiography it will show on our cellphones or iPads.

Instead of the medicine, ultrasound probe and echocardiography stethoscope will become almost not helpful at all.

We would not need the stethoscope anymore.

What is 2D Echocardiogram?

It is just a cardiology name for ultrasound of the heart.

We all are familiar with ultrasound that is undertaken by pregnant women to scan the baby.

It is based on the sound.

The ultrasound of the heart is called Echocardiography. It is based on the same principle and is:

- Very safe

Very safe

- Very simple

Very simple

- Absolutely noninvasive

Absolutely noninvasive

It gives us tons of information in relation to heart.

2D Echocardiogram or ultrasound of the heart tells us the structure and mechanical functions of heart.

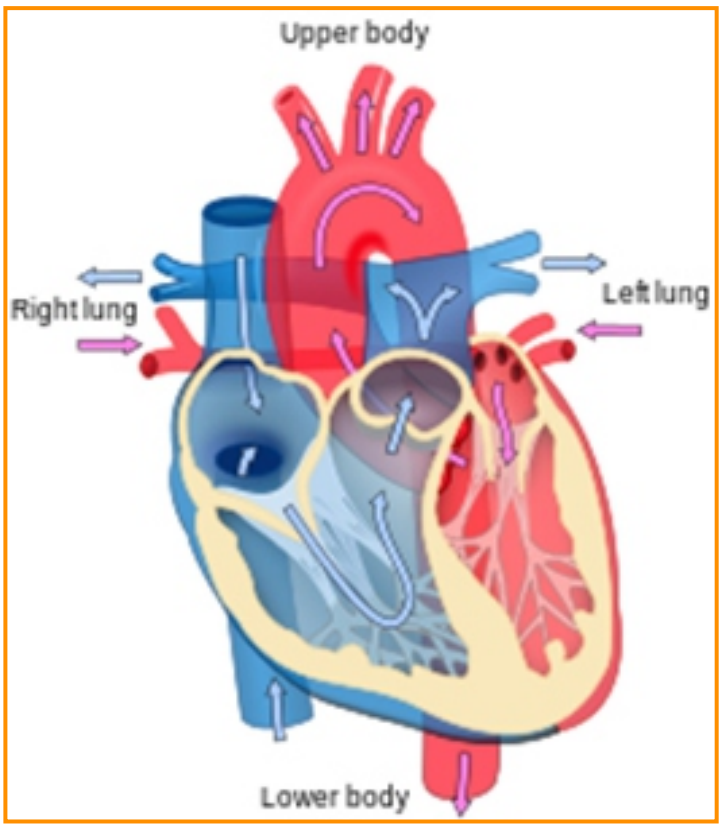
Chapter 5

Fundamentals of Heart That Everyone Must Know

Think About It!

In last 30 to 40 years, maximum advances have been in the field of cardiology and in the field of oncology.

(Cardiology is for heart and oncology is for cancer).



Chap5Fig1

What is very, very scary about heart is once we get a heart attack, we can lose our life in 5 minutes. In cancer, at least we have months and years or even full life with successful treatment, but we may not have such opportunity with the heart attack.

It is true that when we have a heart attack the small part of the heart may be damaged but what really happens is there is an electrical short circuiting and our heart starts beating irregularly, even though heart muscle is in a good shape to pump.

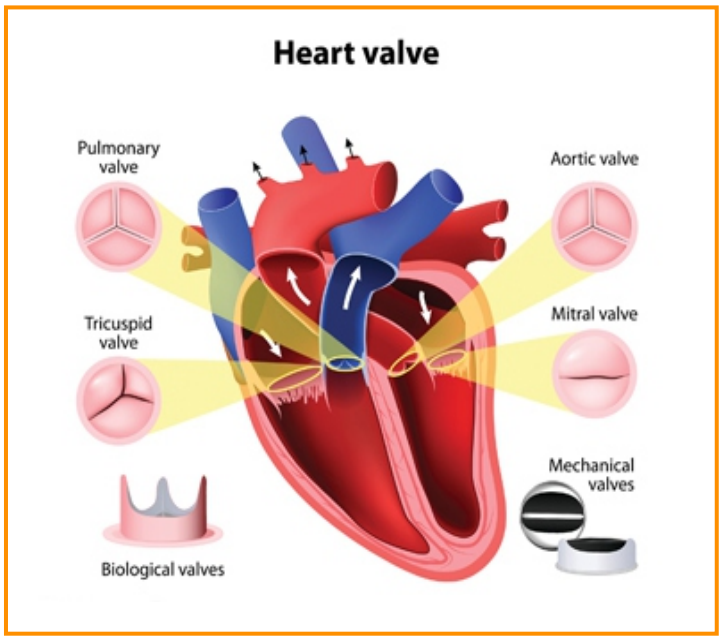
But based on the simple principle of physics if it is not beating regularly, it cannot be an effective pump and if it is not effective pumped, then blood will not be pumped to our brain and if brain does not get oxygen for over several minutes, then over next 5 minutes we are gone.

Chap5Fig2

Once our brain is gone, the recovery is not possible.

Our rest of the body may still be alive, but medically speaking we are not alive anymore.

What is even more very dramatic fact is that if we give a shock the electrical short-circuiting resets and heart starts pumping, ignoring the damaged part of the heart which still remains alive for next 72 hours or three days.



Chap5Fig3

And then, we can quickly do medical intervention and stabilize the heart and also open up the damaged blocked artery and to be honest with continued heart care and medications, we can easily add 15 to 30 years to our life.

Before we get into the details of ultrasound of the heart (2D Echocardiogram), we have to understand the basic structure of the heart.

A. Heart is a **very powerful muscular pump** and the blood flows always in one direction, forward direction only.

B. The heart has **four valves.**

1. Between right atrium and right ventricle called as the **Tricuspid valve.**

2. Between left atrium and left ventricle called as **Mitral valve or Bicuspid valve.**

3. Between right ventricle and pulmonary artery called as **Pulmonary valve.**

4. Between left ventricle and aorta called as **Aortic valve.**

- The back flow (leaking back) of the blood is prevented by the valves.
- They make sure that **blood always flows in one direction**

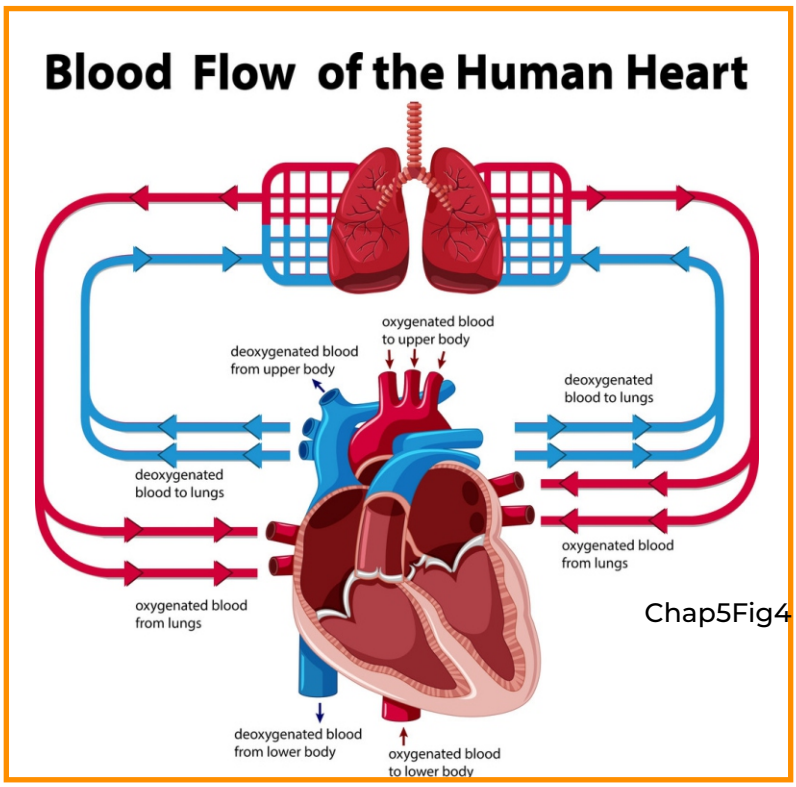
The **air/oxygen goes into our lungs**. Then in the lungs, carbon dioxide is released, and oxygen is absorbed, and this oxygenated blood goes back to left atrium.

Heart is a pump, and it pumps blood always in one direction.

The whole blood is collected and brought to the **right side of the heart.**

From the right side, it pumps blood to the lungs where the exchange of oxygen and carbon dioxide takes place. Carbon dioxide is released, and oxygen is absorbed.

Oxygenated blood is brought back to the **left side of the heart.**

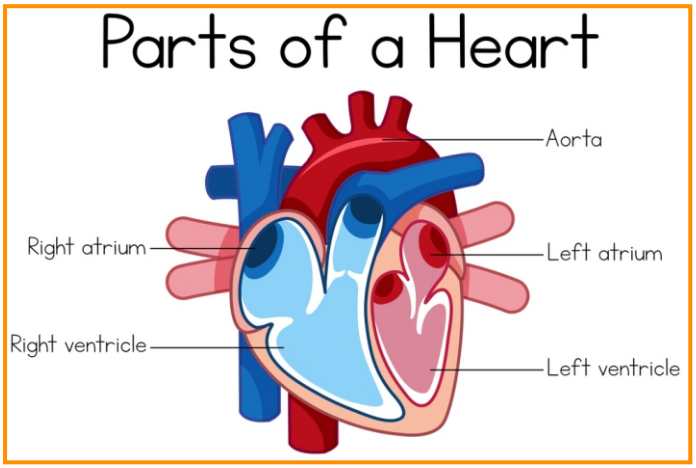


Chap5Fig4

Chap5Fig4

From the left side of the heart, the whole blood is pumped to every part of the body.

And this cycle continues about 72 times a minute and always in one direction



Chap5Fig5

C. Heart has **four chambers:**

- Two are what we call atria, **right atrium and left atrium.**
- The atria are actually thin walled. Their muscle is not as thick.
- And the other two are called ventricles, **right ventricle and the left ventricle**

- The ventricles are really muscular and have thick walls and their major function is to pump blood to the lungs and to the body.

- The two ventricles make the most of the muscle of the heart.

- And the most important part of the heart is left ventricle and the left ventricle pumps blood to rest of the body.

Both ventricles are strong, and they pump powerfully.

But the **left ventricle is much stronger, larger and powerful than the right one.**

This is because the left ventricle has to pump blood to the whole body.

Chapter 6

Ejection Fraction - A Very Important Concept

Think About It!

If heart pushes out only 30% of the blood, then that is a very serious matter because for whatever reason heart is not able to push out enough blood to meet the needs of the body. Then you cannot even walk from one room to another without requiring oxygen or without feeling short of breath.

Ejection fraction is the % amount of blood which heart pushes out with each pumping action.

The normal ejection fraction is 55% -70 %.

The functions of pumping and pushing and the flow of blood in one direction, these are all mechanical functions only.

Ultrasound or 2D Echocardiogram of the heart will tell us that:

1. **Yes**, the blood is flowing only in the one direction.
2. **Yes**, all the valves are functioning well.
3. **Yes**, the heart is contracting and relaxing okay.
4. **Yes**, we can figure out ejection fraction also; the amount of the blood pushed out by the heart.

Chapter 7

What is So Cool About Echocardiogram?

Think About It!

If we lose our little finger of our hand, it is not going to affect our lifespan and we can still live our normal life.

The same principle applies about "heart attack".

Whenever there is a small blockage of heart artery, a small part of our heart muscle is damaged.

But that muscle is still alive for 72 hours or for three days.

And now the technology is so good that doctors/MDs, have several advanced techniques to open the blocked artery and resupply that part and that part of heart recovers.

What really cool is:

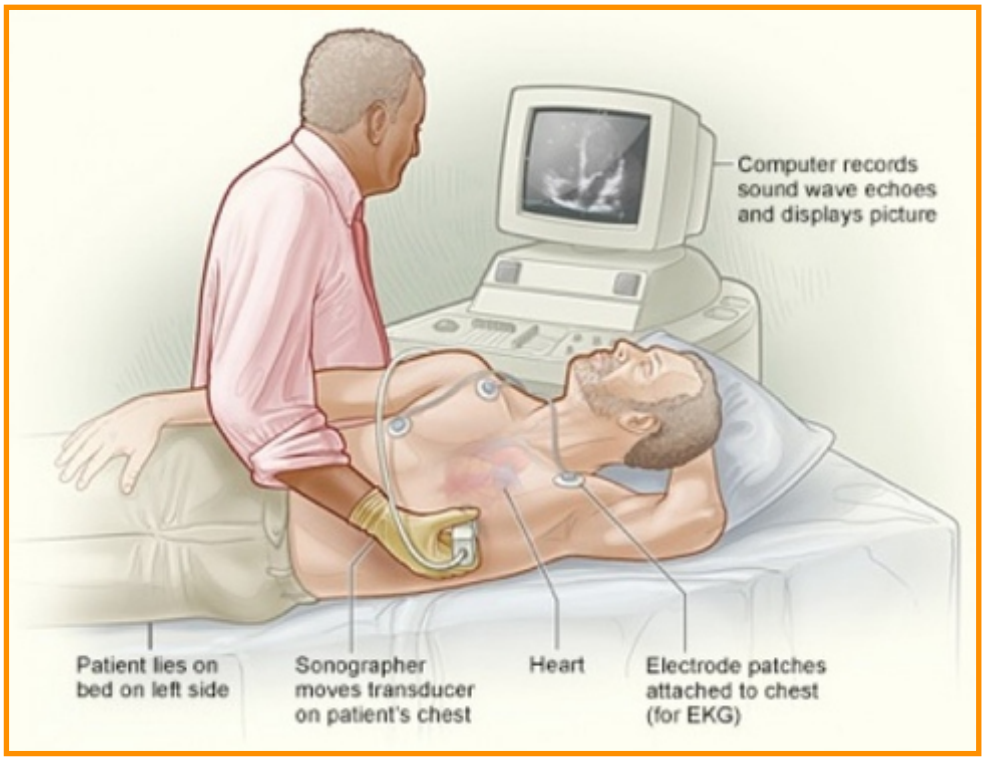
A. Echocardiogram or ultrasound of the heart **is very, very safe.**

B. It is absolutely **noninvasive.**

C. It uses **sound waves**. We use it for pregnant women and their babies all the time

One advantage of doing echocardiography at the age of 30 as I recommend and then every 5 years is that when we are young, echocardiography clearly defines our heart. Then we do it after every 5 years and can easily compare with our previous echocardiography report.

One advantage of echocardiography is that we really do not need chest radiography (chest x-rays) anymore and since there is no exposure to radiation in echocardiography, it is really very helpful.

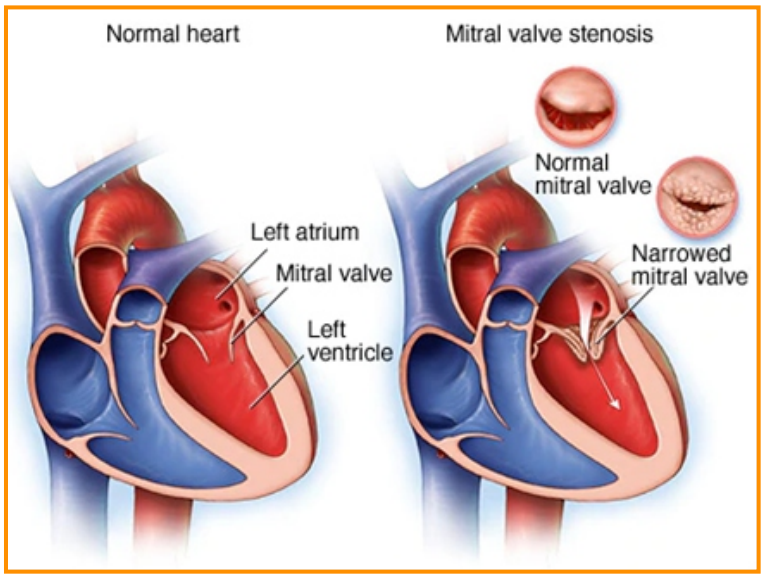


Chap7Fig1

Ultrasound of the heart tells us about:

A. **Leaking valves:** Blood flowing backwards through the valves or through the major arteries - this process is called the regurgitation of the blood.

B. **Stenosed valves:** Sometimes, the valves can actually become stenosed or they can become narrow (called stenosis). Ultrasound helps us to know the degree of stenosis and helps us decide a treatment plan.



Chap7Fig2

Chapter 8

Heart Murmurs

Think About It!

And once again as the blood goes through every part of the body and most importantly to the brain which becomes very important because-

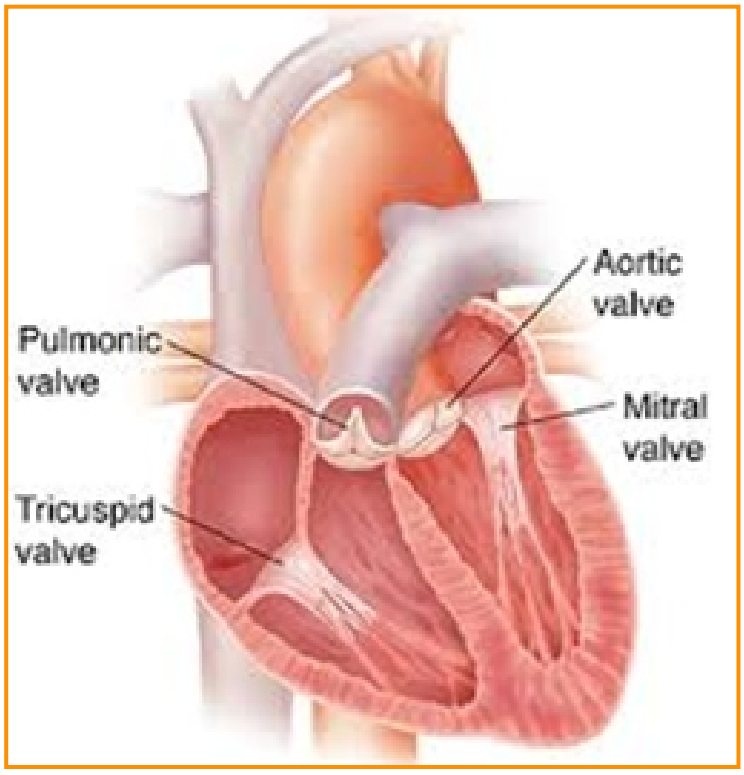
If heart is not able to pump blood to the brain for about 5 minutes,

Then we are gone,

Brain is gone, and

Even though rest of the body may be still alive but life, as we define it, cannot continue.

This cycle continues with each pumping action of the heart which beats about 72 times a minute.



Chap8Fig1

Heart murmurs are when we listen to heart sounds.

Traditionally normal heart sounds are called as:

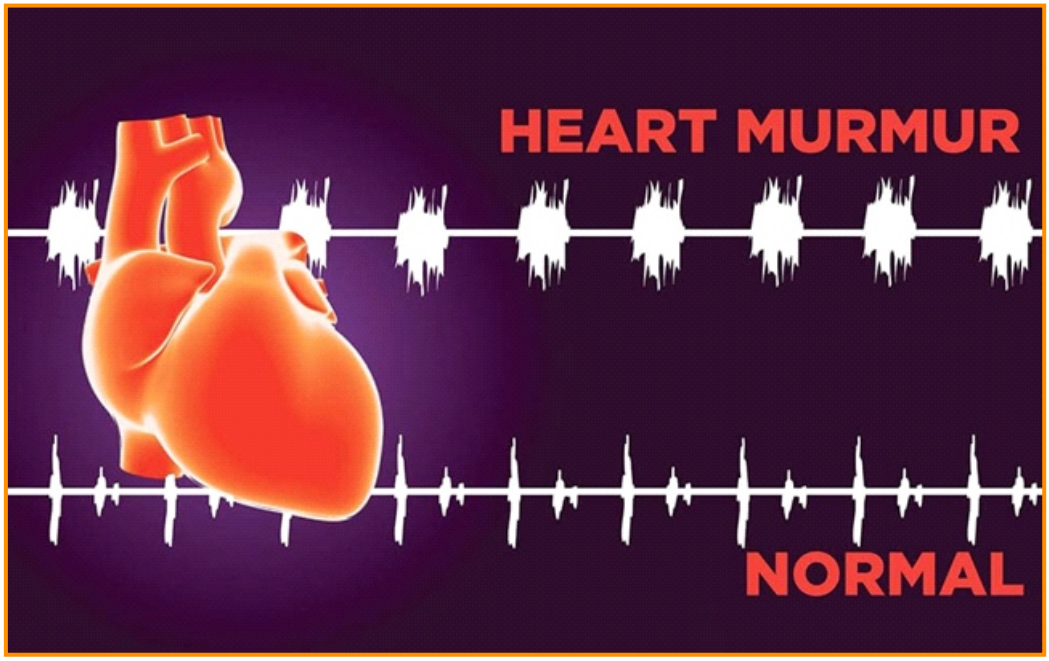
- **S1 (Sound 1), and**
- **S2 (Sound 2)**

Heart murmurs are usually due to:

- **Leaking valves,** or
- **Stenosed valves**

Both situations **disturb the smoothness of blood flow.**

And, we can hear this as murmurs.



Chap8Fig2

Chapter 9

Fluid Around Heart

Think About It!

There is relation to the heart,

We have a severe chest pain as if we are going to die.

Such pain happens in the aortic dissection where there is a tearing of the valve of our big artery. It can be very life threatening.

We can do a chest x-ray. X-ray shows that where the big aorta goes shows wider area, what we call widened mediastinum.

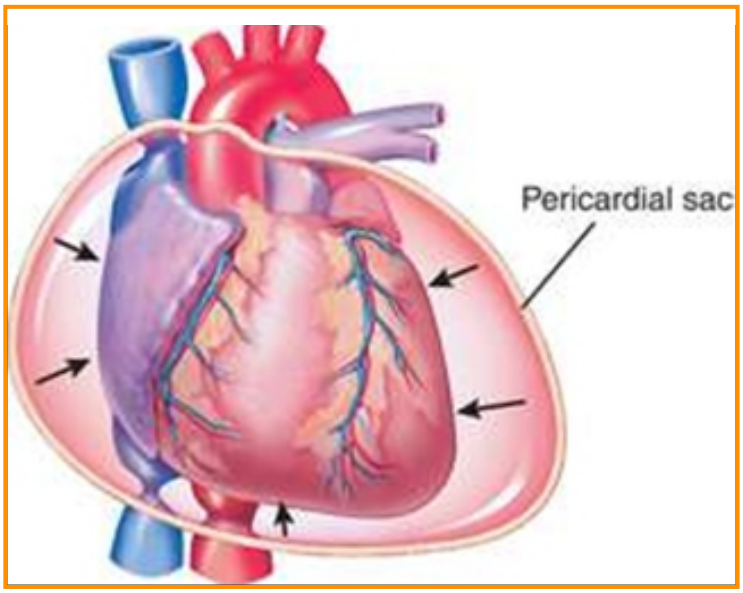
And we can use transesophageal echocardiography and it will really help us to diagnose aortic dissection and we can move very fast and it can be lifesaving.

The heart is enclosed in a pericardium.

We can see if there is any extra fluid in the pericardium.

Too much fluid interferes with the contraction of the heart.

Plus, it is **Not Normal** either.



Chap9Fig1

Chapter 10

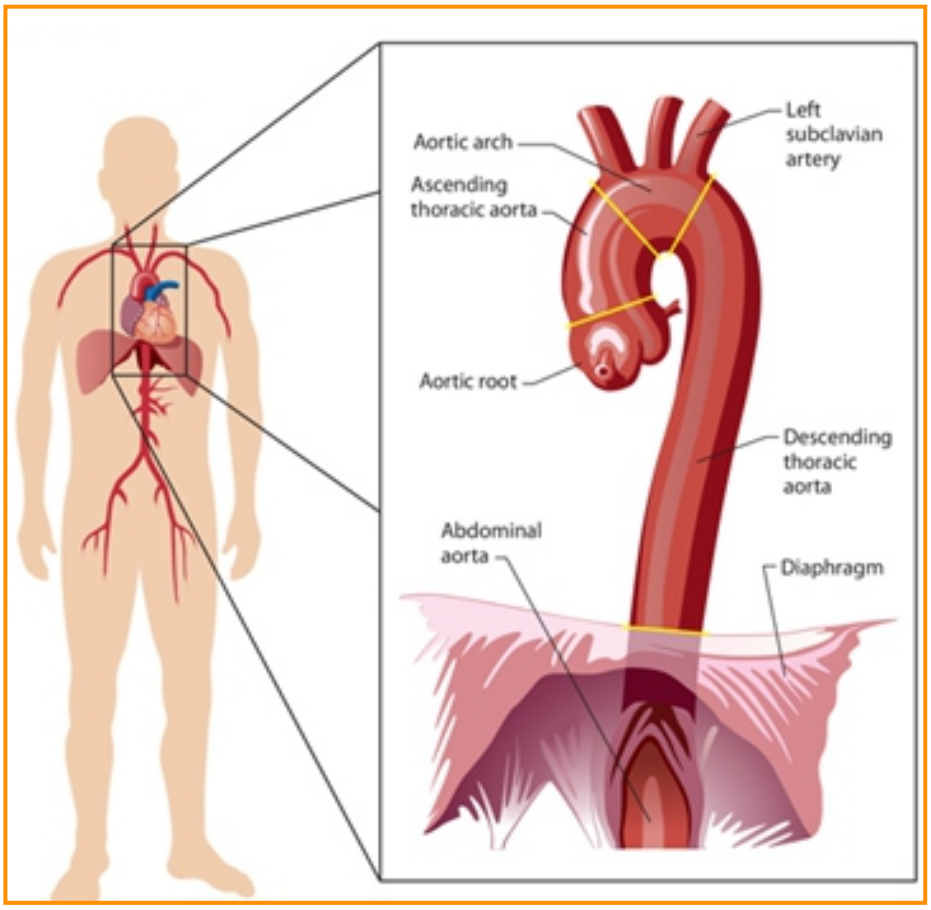
Infection of Heart Valves

Ultrasound of the heart or 2D Echocardiogram)

Also helps to find out/detect-

Any infection in the heart (a very serious condition).

Also, especially if there is **any vegetation on/around the heart valves caused by any infection.**



Chap10Fig1

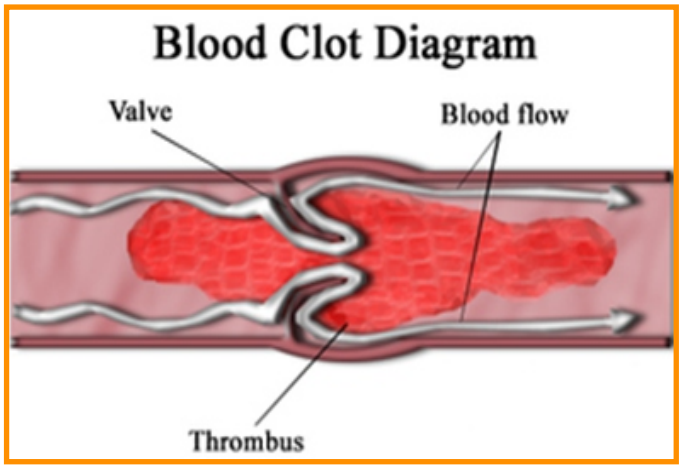
Chapter 12

Why Echocardiography is So Important?

An ultrasound (2D Echocardiogram) is very helpful to tell us about blood clots.

Clot can break up and go to our brain.

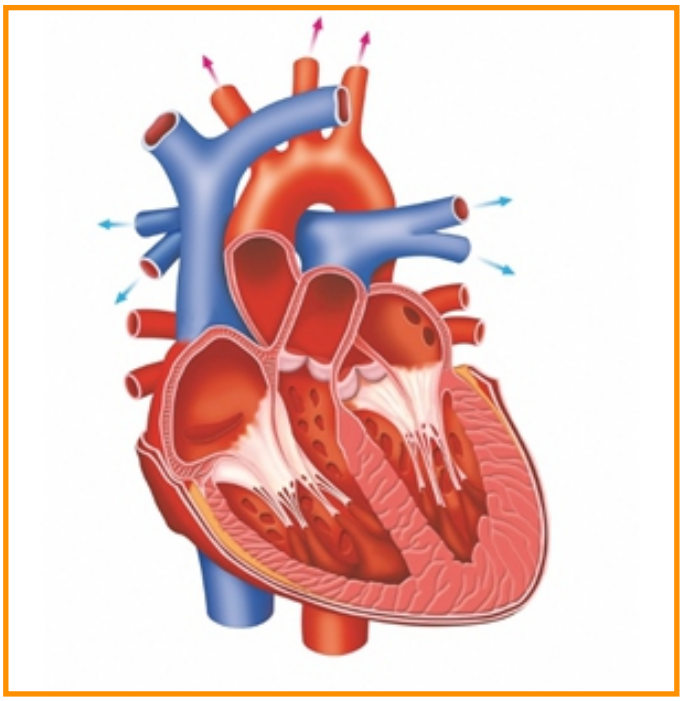
Sometimes, children are born with a hole in the heart. Ultrasound (2D Echocardiogram) can tell us about the same.



Chap12Fig1

2D Echocardiography also diagnoses:

- Congestive heart failure
- Left ventricular outflow tract obstruction
- Concentric left ventricular hypertrophy
- When children are born, we can easily figure out is there any hole between the two chambers of the heart or if there is any genetic defect in the baby's heart.
- In expert hands and with all most recent technology, one can even figure out any weakness of the left ventricular muscle contraction which is an early sign of any heart issues.



Chap12Fig2

- Whenever we have a heart attack and we are recovering, echocardiogram is a simple non-invasive procedure.

It can help us:

If there has been any serious complication of the myocardial infarction.

- If there is any small vegetation, we can see it.

- Also, our big artery Aorta, comes out of the heart and goes downwards in our chest, goes to the esophagus, so if there is any tearing of the blood vessel what we call thoracic aorta dissection, which can be very life threatening, with this transesophageal echocardiography, we can really detect it with a high degree of accuracy.

Chapter 13

Heart is So Important and Test is So Simple! We Should Start Screening at Age 30

Think About It!

What is very important to say is that there is very high negative predictive value. In medical profession it means if it is negative, then we absolutely have no risk of getting heart attack for the next 5 years along with the normal ECG and the echocardiogram of our heart.

Starting at age 30 will give us:

A very good baseline, and since any blockage of the heart arteries is a very slow process, we do not really need to repeat it before 5 years. And considering that especially in India heart issues are becoming rampant.

The most important example is Kolkata where one in four persons under the age 40 has heart issues which is a very high number in a population of 150 lakh people.

It also means that one in four persons is at the risk of dying suddenly.

Should they die? Of course not!

Kolkata Heart Health Stats (courtesy: The Times Of India)
25% | Cardiac patients in Kolkata aged below 40
Around 10% of them | Don't survive their first heart attack
Below-40 population | More likely to die of heart attack
Triggers | Diabetes, stress, food habits, sedentary lifestyle, smoking, alcohol consumption
Other triggers | Anger, hostility and cynicism
Early signs of an underlying cardiac arrhythmia | Chest pain, numbness in limbs, cold sweats, sleep disturbance, prolonged unusual fatigue and memory trouble

Today, we have such advanced technology and medical knowledge that if we find out that we have heart issues, we can really manage and really add 15 to 30 years to your life.

We doctors are not judgmental.

Our only passion is to help you and keep your heart healthier for next 15 to 20 years till you get to really your wonder years and your family is stabilized and you have a peace of mind that you have done your share and that is a much better position than dying suddenly at the age of 40 or 45.

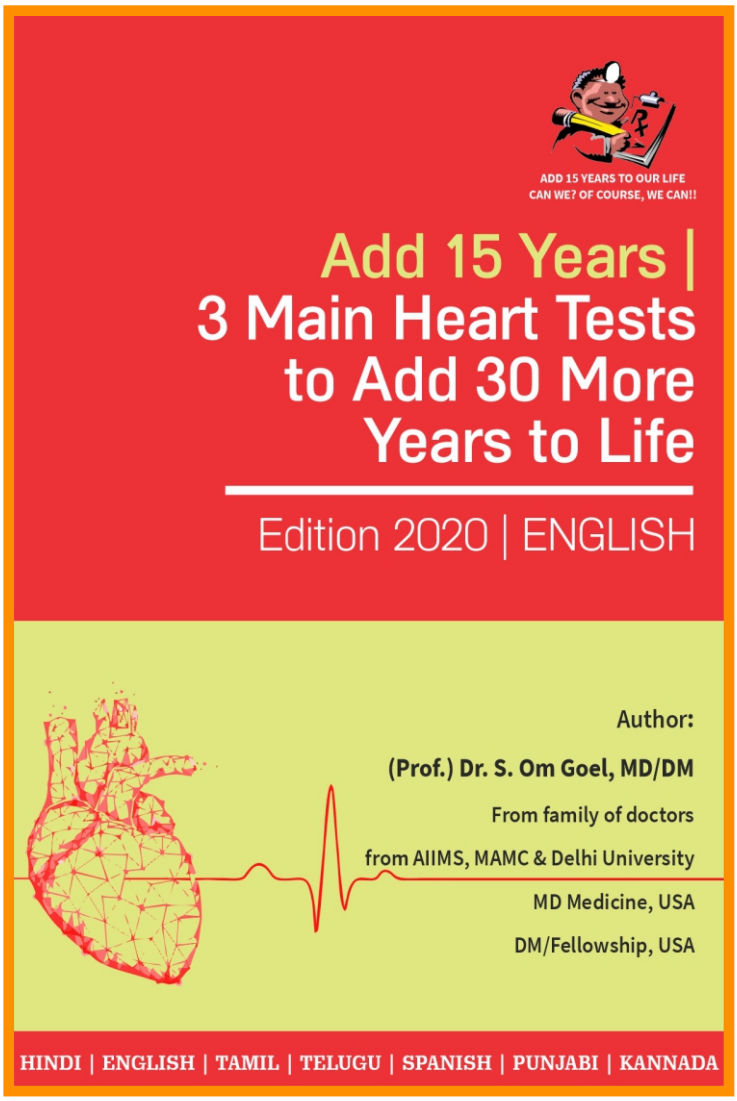
Chap13Fig1

More than 25 to 50 years ago people with the cardiogenic shock, almost more than 80% people used to die. Now, we have cut down that mortality dramatically. Every life counts.

New technology is coming, new testing is coming, but they are very costly initially. I am sure with time they will get cheaper too and replace my current recommendations of these three tests

Chap13Fig2

Add 15 years |
3 Main Heart Tests
to Add30 More
Years to Life



Chap13Fig3