



**TELEMEDICINE**  
Kerala 2008, Just before on 2023

**Telemedicine To Live Up To 85Years!**

**Next Step Living Longer Books**

**It's time to be obsessed  
to our “Heart Health”**

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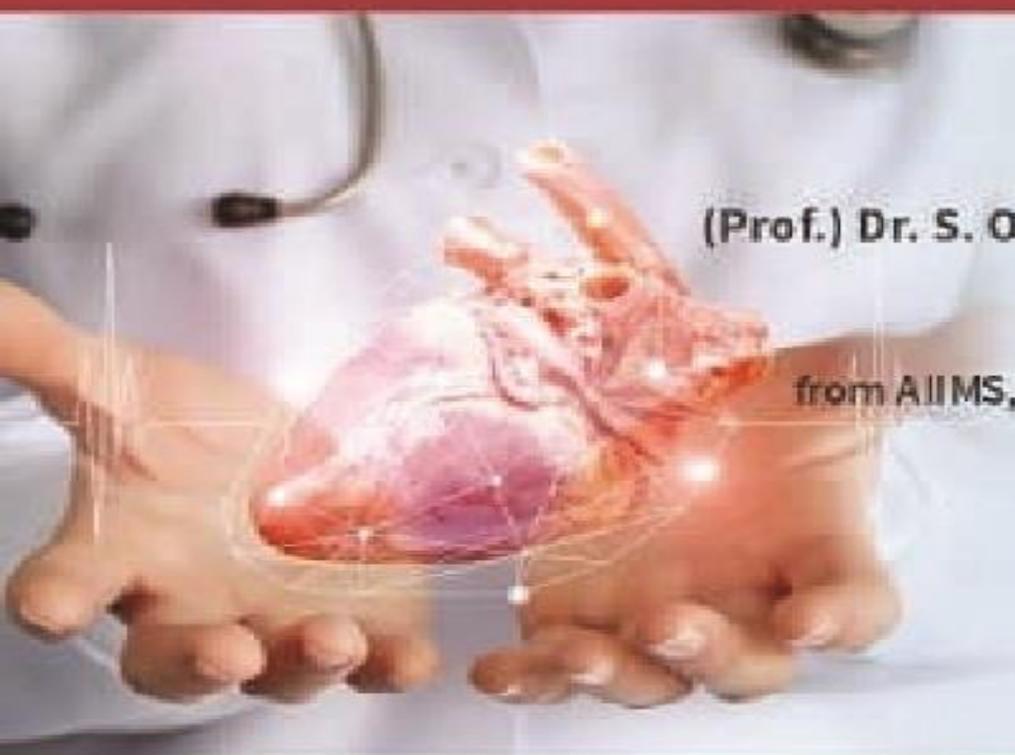
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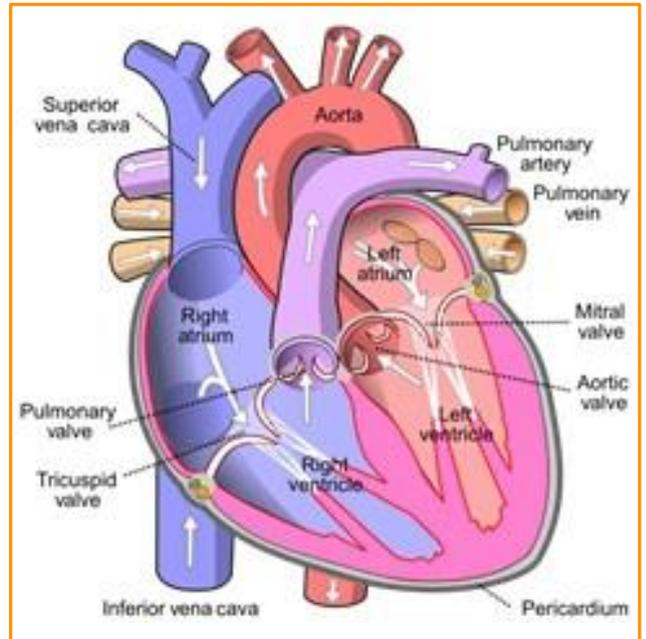
# Chapter 1

## Why our heart is so important?

### **Think About It!**

There was a story in the Calcutta edition of the newspaper, 'The Times of India' few months back, which claimed that **One in four every person in Calcutta has heart issues or is at the risk of heart attack!**

The ratio is quite shocking for a nation having population of 150 lakh. This also means that one in every four persons is at the risk of dying suddenly.



Chap1Fig1

### **Kolkata Heart Health Stats**

(courtesy: The Times Of India)

**25%** | Cardiac patients in Kolkata aged below 40

**Around 10% of them** | Do not survive their first heart attack

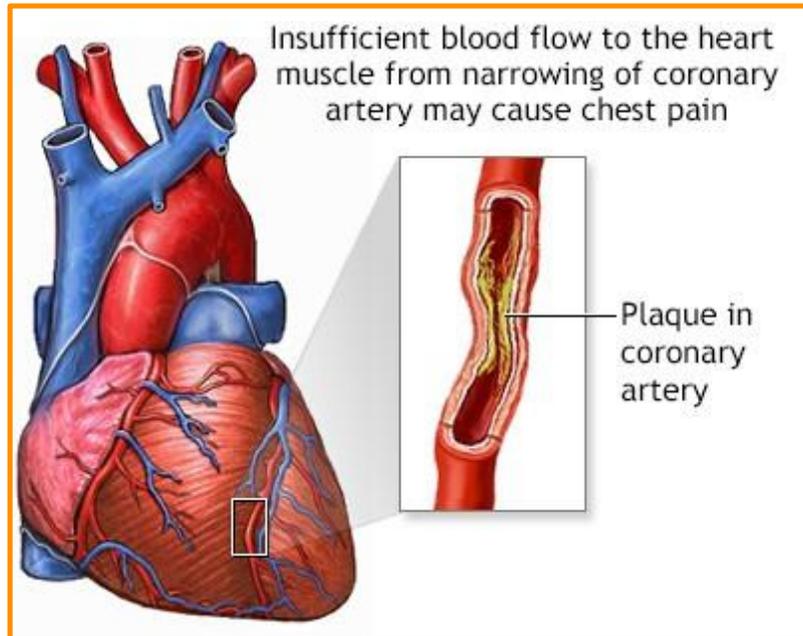
**Below-40 population** | More likely to die of heart attack

**Triggers** | Diabetes, stress, food habits, sedentary lifestyle, smoking, alcohol

**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

## Why is the heart so important?



Chap1 Fig2

As a physician, medically and statistically speaking,

**Our heart health is most important to us!**



**If a single small branch of the artery gets blocked by plaque or cholesterol, then it can affect a part of the heart., and-**

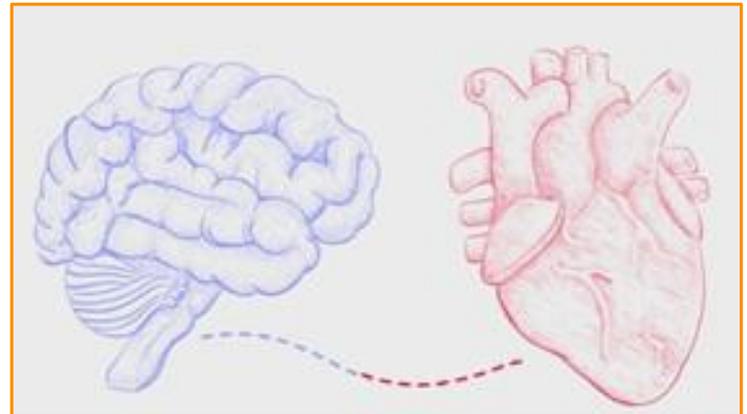
**As a result, we may have a heart attack or we may lose our life within few minutes.**

# Chapter 2

## Heart is a muscle and also a pump!

**Heart is a muscle, and it is a pump.**

The most important function of heart besides pumping food and oxygen into all parts of the body, is to **pump food and oxygen to the brain.**



Chap2Fig1

And we all know:

Brain is very important for us.

- If our brain is gone, we are gone even though rest of the body is still alive
- During heart attack, we try to revive a person through **CPR (Cardiopulmonary Resuscitation)** in which we mechanically pump/compress the heart and force blood into the brain
- When CPR is also not helpful, in such situation even we doctors cannot do much and we let go off people



Chap2Fig2

# Chapter 3

## It's time to be obsessed with your heart health

A very important question is why we should be obsessed with the health of our heart.

To be honest, as a physician I will say –

We should be obsessed with the health of our heart from very young age,

Starting at age:

**30 for a man** and, **35 for a woman.**

We all know that how impossible it is to get medical attention in 5 minutes.

**Bottom-line is we all know that, only time when we suddenly go or lose our life, is due to the heart attack.**

**The only medical reason and basis for such a situation is- the heart attack, and we can lose our life in 5 minutes.**

# Chapter 4

## We cannot afford to have a heart attack in India!

### We all understand that we cannot afford to have a heart attack, especially in India.

We specially cannot afford to have heart attack in India, because it is almost **impossible to get medical attention within minutes.**

#### **Reasons could be various:**

- Family gets panicked and do not understand emergency step to be taken
  - Emergency numbers are not handy
  - Mismanaged traffic system could delay reaching the hospital
  - Congested roads and huge number of vehicles on the road could also lead to delay in getting emergency services
- 
- Chap4Fig1
- Also, most of the population is not tuned to ambulance sounds and lack the understanding of providing free passage to an ambulance
  - Even if you succeed in reaching hospital in time, usually it takes an hour or more in fulfilling the admission formalities

**Every minute delay could really decide whether you live or die.**

**In other words, there is no reliable good system that exists here in India to get urgent medical attention unlike what is available in most of the western countries.**



Chap4Fig2

**Even if we have to take our family members to the hospital –**

**we all know it will take an hour or more.**



Chap4Fig3

# Chapter 5

## Maintain the Heart Health with 3 important tests!

In order to maintain a healthy heart and to live longer, what should we do?

**Our only hope is:**

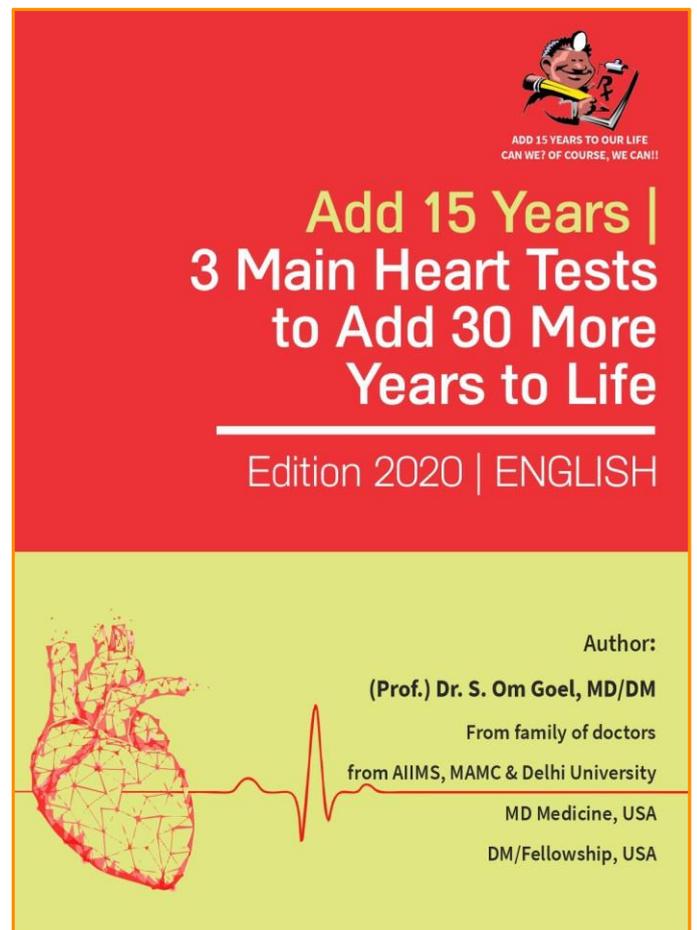
1. To anticipate the risk of heart attack



Chap5Fig1

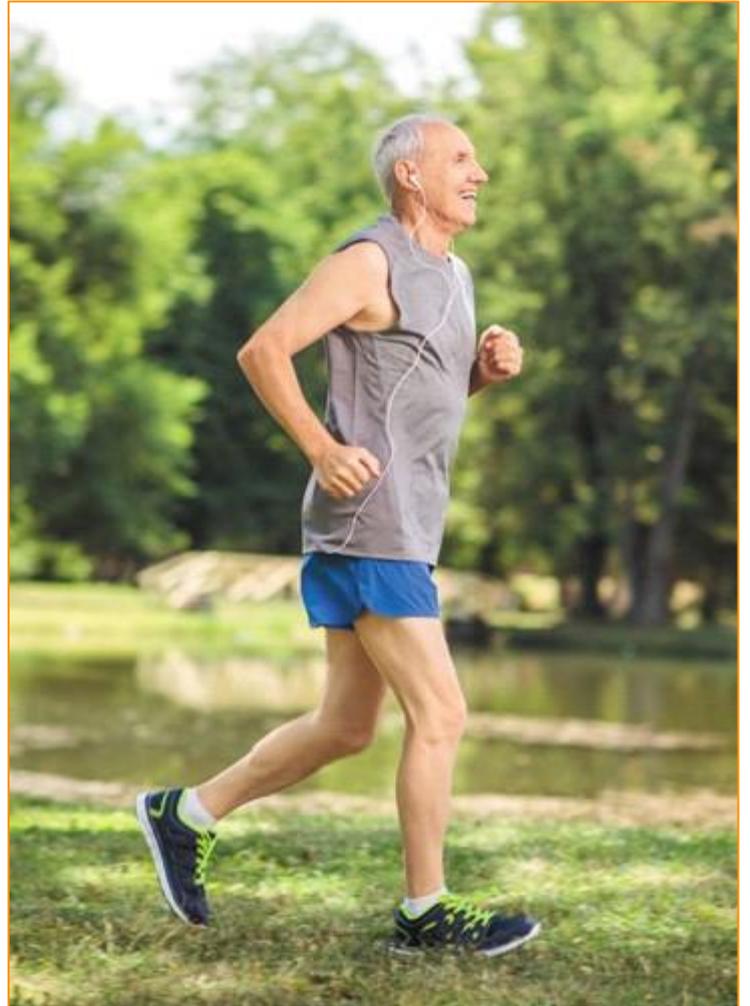
2. To go through some fundamental testing every five years to assess the status of our heart

**(Read our book: “3 Main Heart Tests to -- Add 30 More Years to Life”)**



Chap5Fig2

***3. To obviously do everything to maintain health of our heart which is actually the best approach***



Chap5Fig3

# Chapter 6

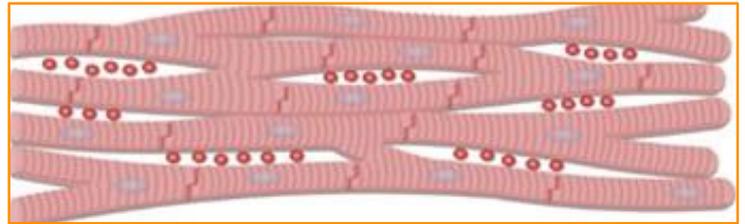
## Heart is a very unique muscle!

Heart is the most important muscle in our body,  
because we are alive as long as our heart is pumping blood to our body.

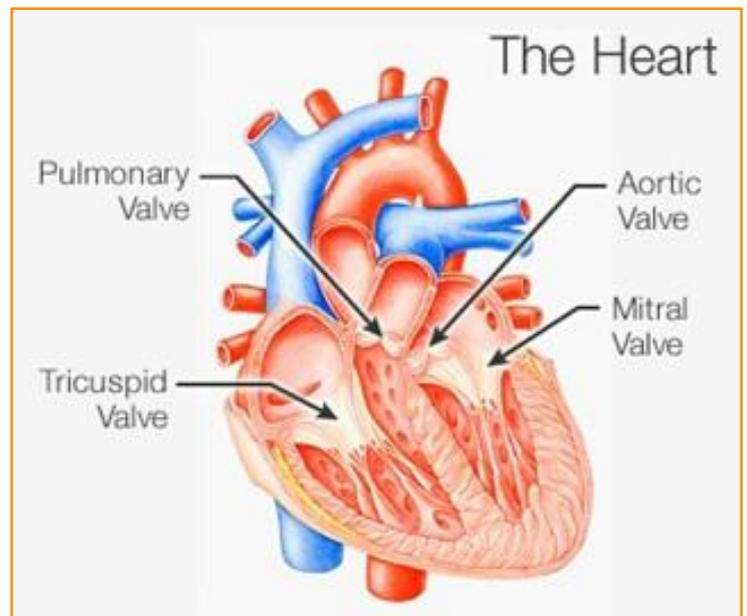
The following section covers few unique features of heart, which all of us should know.

### Heart is 100% muscle.

- In medical terms, heart is a muscular organ
- It is made up of muscles called Cardiac muscles, found only in the heart
- The cardiac muscle undergoes rhythmic contractions as the heart beats so as to pump blood to the whole body
- Heart is a very powerful muscular pump and the blood flows always in one direction, “forward direction only”
- The heart has four valves and the back flow (leaking back) of the blood is prevented by the valves
- Heart valves make sure that blood always flows in one direction



Chap6Fig1

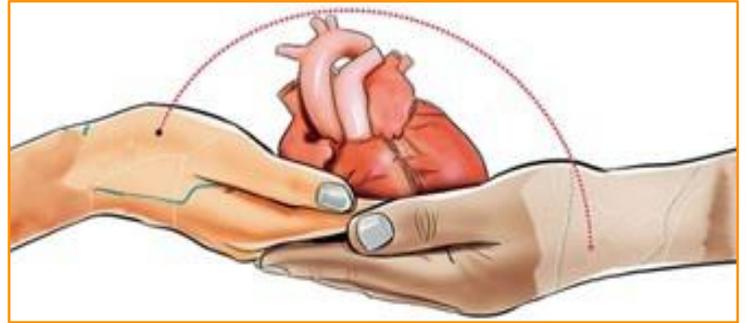


Chap6Fig2

# Chapter 7

## Unique feature of Heart: It can beat on its own outside the body!

A. This unique feature enables us to do the heart transplant.



Chap7Fig1

B. The advanced medical technology enables doctors to transplant heart from an individual called donor (who is not medically alive or who recently died due to an accident) to the recipient of heart transplant.



Chap7Fig2

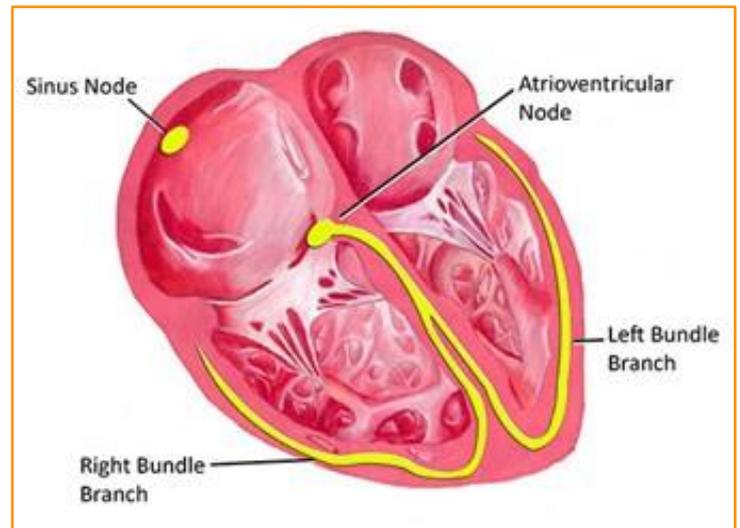
# Chapter 8

## Another unique feature of heart: Its electrical switches

Another unique fact about heart is that heart rate and pumping action is controlled by the electrical switches.

1. There are 2 electrical switches in the heart:

- Switch 1: **Sinoatrial Node (SA Node)**
- Switch 2: **Atrioventricular Node (AV Node)**

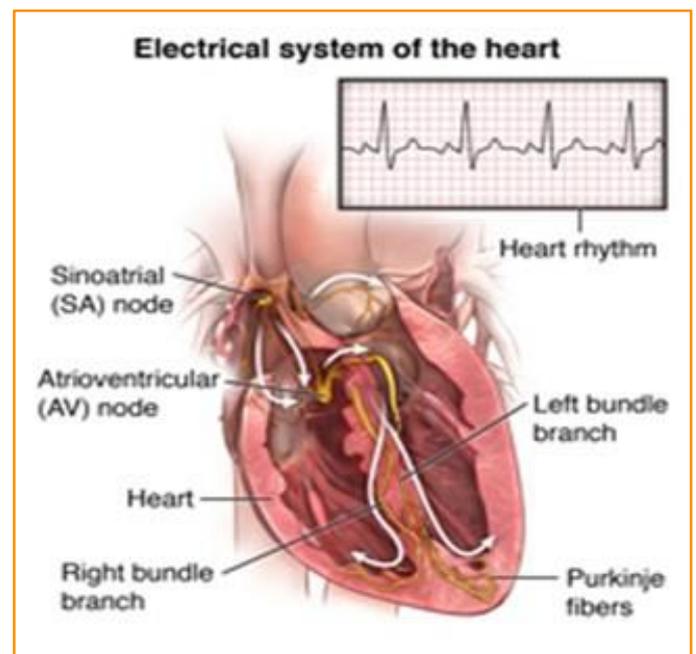


Chap8Fig1

2. Every part of the heart is fully wired

3. There is a method/rhythm to the pumping action of heart

4. There is a method to the electrical conductivity and electrical switch system



Chap8Fig2

An electrical switch turns on and off, setting the rate at which the heart pumps

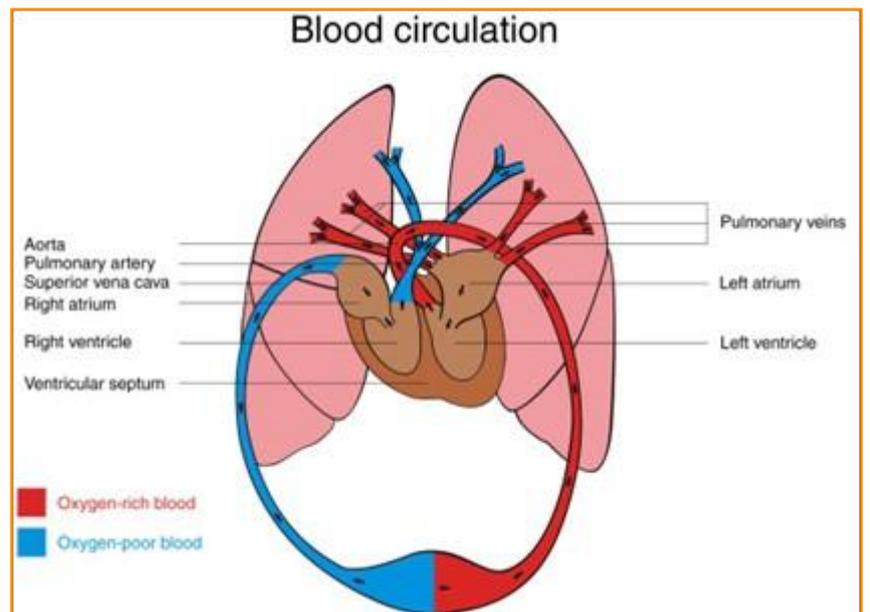
5. Electricity goes in one direction along the pathway



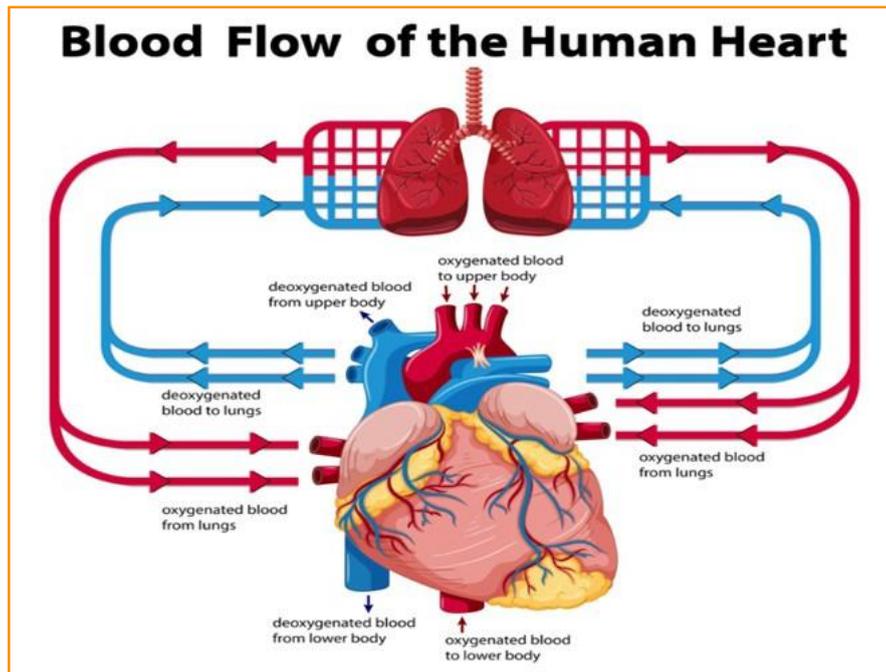
Chap8Fig3

6. The blood comes from the body and goes to the right side of the heart

7. Then, the right side of the heart pumps the blood to the lungs for exchange of oxygen and carbon dioxide



Chap8Fig4



Chap8Fig5

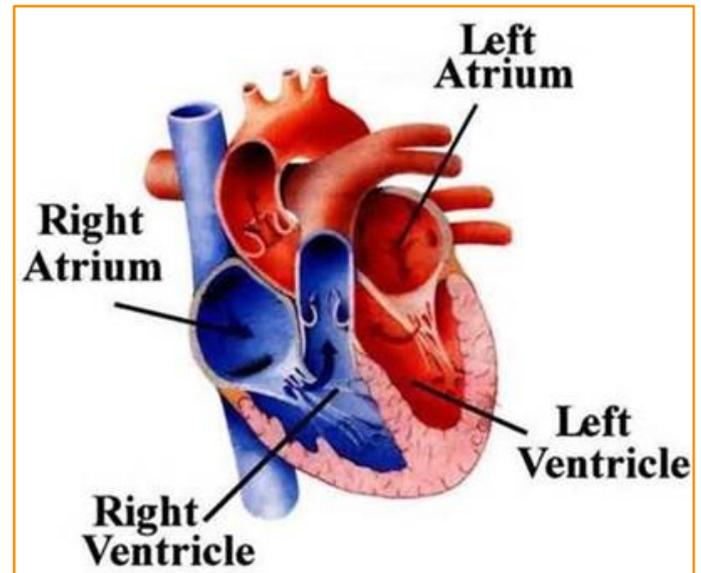
8. And the oxygenated blood then comes back from the left side of the heart.
9. Then, left side of the heart pumps that blood to every part of the body.

# Chapter 9

## Our heart has 4 chambers!

There are **four chambers** in our heart:

- Two are what we call **Atria, Right Atrium & Left Atrium**
- The atria are actually thin walled. Their muscle is not as thick
- And the other two are known as ventricles- **Right Ventricle & Left Ventricle**
- The ventricles are **really muscular** and have **thick wall** and **their major function is to pump blood to the lungs and to the body**
- And the most important and most powerful part of the heart is **Left Ventricle**. The **Left Ventricle pumps blood to rest of the body**



Chap9Fig1

*Both the atria and ventricles work together in co-ordination, alternatively contracting and relaxing, so as to pump blood to the body.*

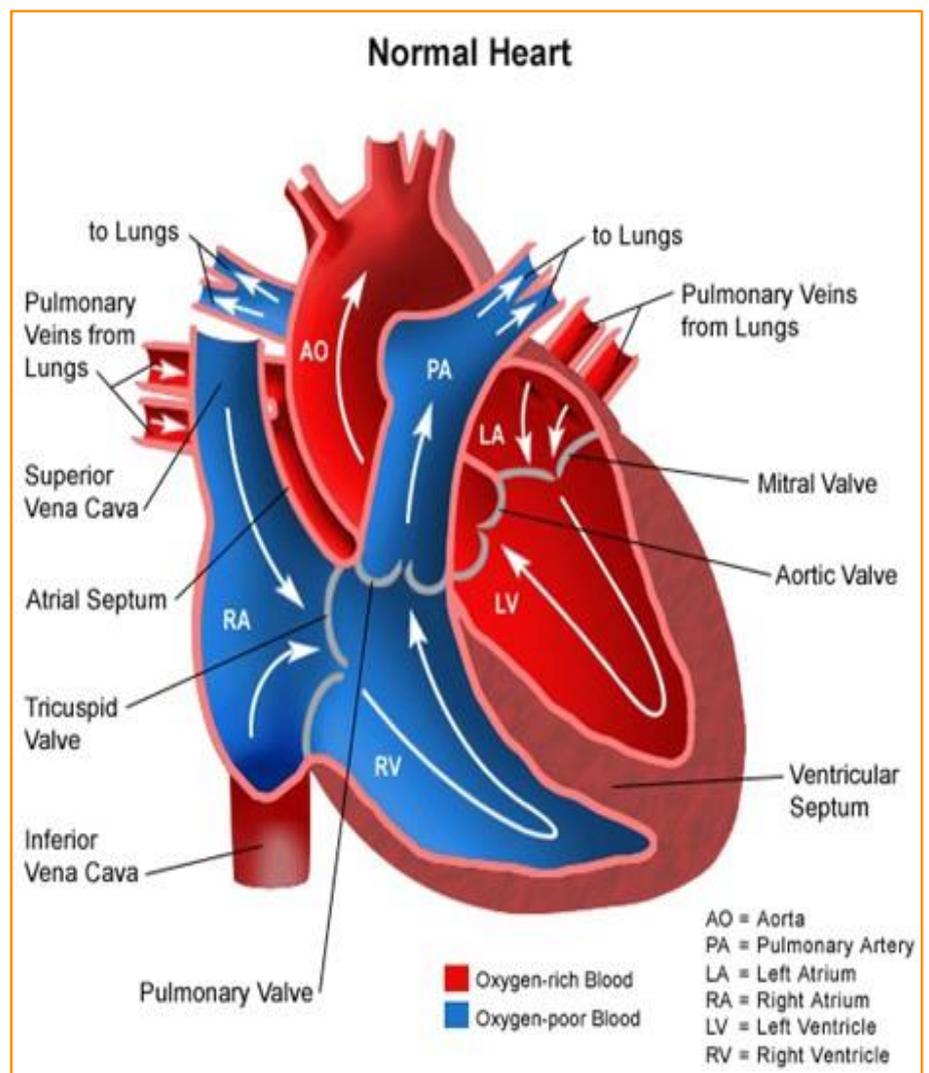
*The heart has its own electrical system, which ensures it beats rhythmically at 72 beats per minute.*

# Chapter 10

**Blood in the heart always flows in one direction!**

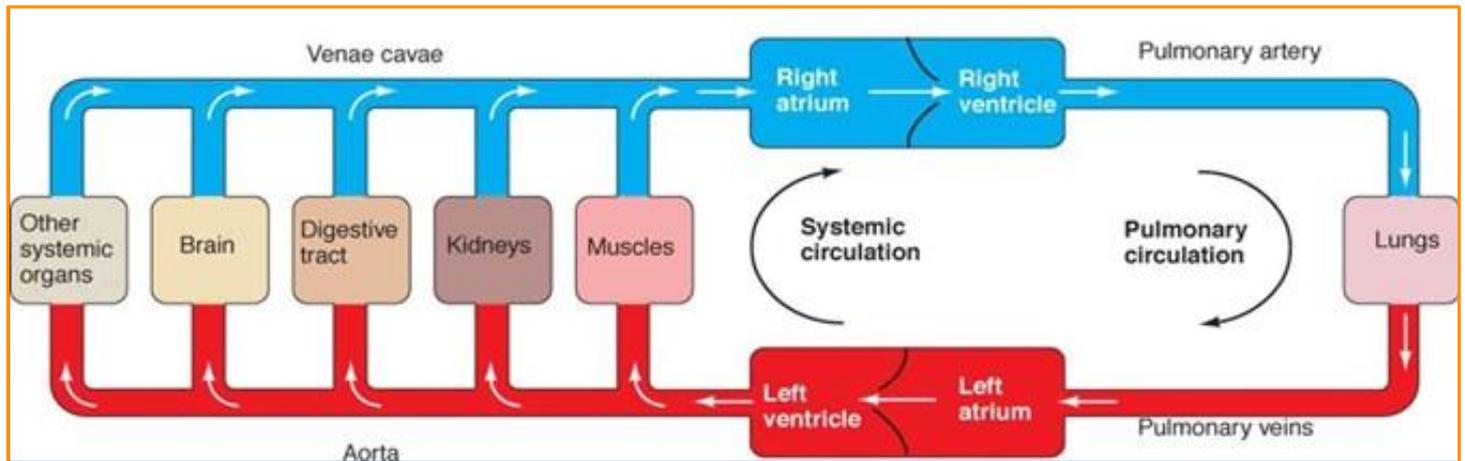
**We must understand that the blood in our heart always flows in one direction.**

- We breathe in air which has O<sub>2</sub> in it
- The air/oxygen goes into our lungs
- Oxygen is absorbed in the lungs and CO<sub>2</sub> is released
- This oxygenated blood goes back to left atrium



Chap10Fig1

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



Chap10Fig2

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

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

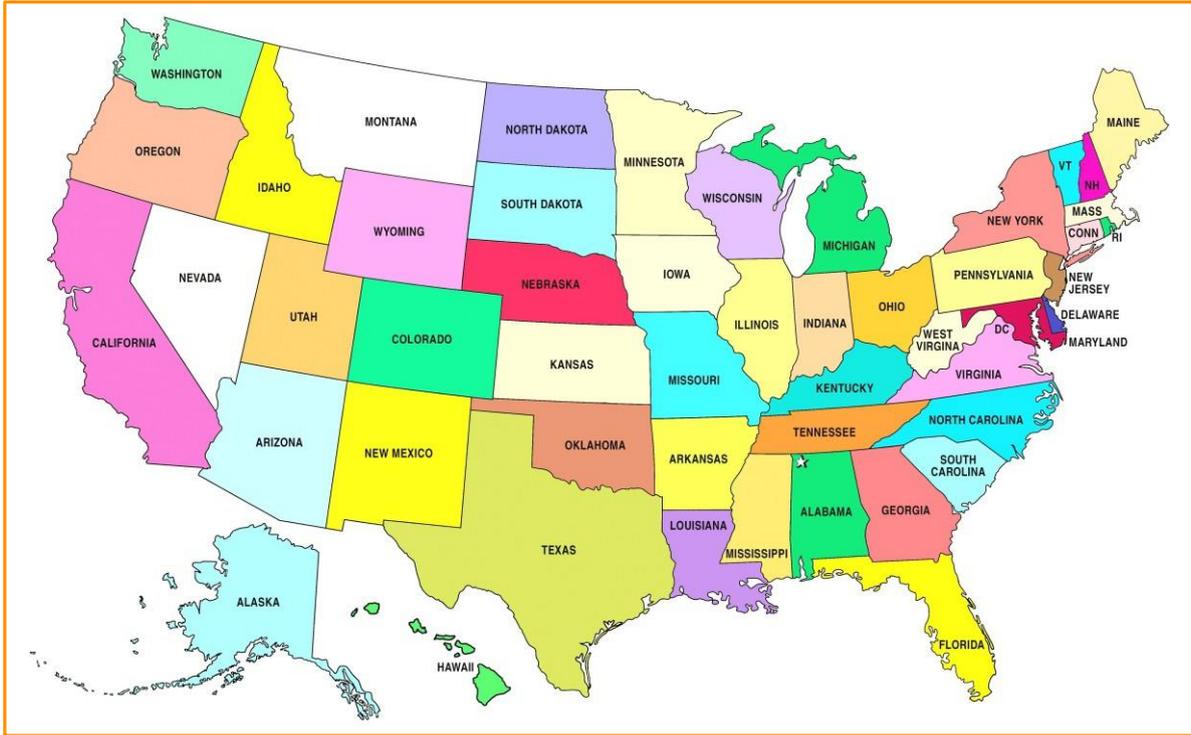
**Oxygenated blood is brought back to the left side of the heart.**

**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.**

# Chapter 11

## Our heart situation is much better in USA!

Things are lot different in USA, why?



Chap11Fig1

First thing in USA, awareness is huge.

- **Doctors are also very aggressive and proactive**
- **Money is always a huge factor**



Chap11Fig2

**And in this case insurance does pay everything for the medical treatment of the patients.**

- If you have so called **“red-flags” or “danger-signs”**, then insurance also pays for your evaluation by your family physician.
- And doctors are **highly trained in figuring out any** so-called **“red-flag signs” or “danger signs”** which we may not realize ourselves.
- And in USA, **insurance also pays for every year physical examination and (gold standard) blood tests.**
- Even if we have a heart attack, **ambulance is available within minutes.**
- The **ambulance staff in USA is also highly trained** and highly paid.



Chap11Fig3

- Also, the technology itself is very advanced and technology helps ambulance staff to connect with the M.D/doctor in the emergency room and **emergency care really starts at our doorstep.**

# Chapter 12

**We cannot afford to have a heart attack in India;  
So, what do we do?**

**We have to anticipate health of our heart.**

**We have to know whether we are at risk of having a heart attack.**



**Considering every situation, all the factors  
and what is happening today in Indian communities.**



**I will highly recommend that we start screening ourselves at age 30.**



**Age 30 sounds too young, YES,  
and we are usually in good healthy and statistically the risk of having  
heart attack is almost nil at this age.**

**Something has to be seriously very wrong to have a heart attack  
at the age 30.**

**But one reason of concern is that we are now having heart attacks in the youngish population in India.**



**Hence I recommend these simple, safe, non-invasive tests. They are not costly and are needed only once in every 5 years.**



**And we do need a baseline at age 30 years and then every 5 years. As long as 3 screening tests are normal, we cannot have heart attack for next 5 years.**