

# Cardiac Dysrhythmia

## What is a cardiac dysrhythmia?

The normal, healthy heart has a regular rhythm and the heart normally beats between 50 and 100 beats per minute.

A cardiac dysrhythmia (also called an arrhythmia) is an abnormal rhythm of your heartbeat. It can be slower or faster than a normal heart rate. It can also be irregular. It can be life-threatening if the heart cannot pump enough oxygen-rich blood to the heart itself or the rest of the body.

A cardiac dysrhythmia can be caused by many things, including problems with the heart valves, coronary artery disease, heart failure, drug use, and some medicines. Common types of dysrhythmia include:

- **Atrial fibrillation:** In atrial fibrillation the upper chambers of the heart do not squeeze (contract) in an organized way and are not working with the lower chambers. This affects the ability of the heart to pump blood.
- **Atrial flutter:** In atrial flutter, the upper chambers of the heart beat faster than the lower chambers of the heart, which causes less blood to be pumped to the body.
- **Multifocal atrial tachycardia:** In multifocal atrial tachycardia, too many signals are sent from the upper chambers of the heart to the lower chambers, causing a very fast heart rate.
- **Bradycardia:** In bradycardia, your heart beats very slowly.
- **Paroxysmal supraventricular tachycardia (PSVT):** This is a rapid heart rate that happens off and on and starts in the upper chambers of the heart.
- **Ventricular tachycardia:** The heart's lower chambers beat in a regular rhythm but very fast. This abnormality is usually caused by heart disease. It can sometimes be caused by medicine you are taking.
- **Ventricular fibrillation:** The heart muscle quivers and is uncoordinated. This prevents the heart from pumping.

## What can I expect in the hospital?

You are in the hospital because your heart rhythm needs to be treated so your heart can pump enough oxygen-rich blood to the heart muscle and the rest of the body. Several things may be done while you are in the hospital to monitor, test, and treat your condition. They include:

### Monitoring

- You will be checked often by the hospital staff.
- A heart (cardiac) monitor will be used to keep track of your heartbeat. If you have an irregular rhythm that might be dangerous, it will be treated right away.
- Your blood oxygen level will be monitored by a sensor that is attached to your finger or earlobe.

- Your fluid intake may be monitored closely by keeping track of everything you eat and drink and any IV fluids you receive.
- You may have a small tube (catheter) placed into your bladder through the urethra (the opening from the bladder to the outside of the body) to measure the amount of urine in and drain urine from the bladder.

## **Testing**

Testing may include:

- Blood tests to check for the amount of certain proteins in the blood to find out if your heart muscle has been damaged
- Blood tests to check levels of potassium, calcium, and other minerals
- Blood tests to check for medical conditions that may cause dysrhythmias, such as thyroid disease
- Electrocardiogram (ECG): A test which measures and records the electrical activity of your heart
- Chest X-ray: Pictures of the inside of your chest to check if your heart is bigger than normal and if there is extra fluid or other problems in your lungs
- Ultrasound (echocardiogram): Sound waves and their echoes passed through your body from a small device (called a transducer) that is held against your skin to create pictures of the inside of your heart to look at your heart valves, blood flow, and how well your heart muscle is pumping
- Heart catheterization (coronary angiogram): A series of X-rays taken after your healthcare provider places a long, thin, flexible tube (catheter) into a blood vessel in your groin and up to your heart and injects a special dye into your blood vessels to look for areas where the dye may be leaking out of a blood vessel or to find out if blood vessels are blocked and how bad the blockage is
- Stress test: A test that measures how your heart responds during exercise. If you are unable to exercise, you will be given a medicine that increases the work of your heart in order to measure your heart's response. This test will help your provider decide what treatments and exercise are best for you or may be needed in the future.

## **Treatment**

The treatment for a cardiac dysrhythmia depends on its cause, your symptoms, your overall health, and any complications you may have.

- You will have a small tube (IV catheter) inserted into a vein in your hand or arm. This will allow for medicine to be given directly into your blood and to give you fluids, if needed.
- You may receive oxygen through a small tube placed under your nose or through a mask placed over your face.
- Your provider may prescribe medicine to:
  - Help slow the heart rate, reduce blood pressure, and reduce the workload of the heart
  - Help the heart to beat normally

- Prevent blood clots
- You may need surgery to treat your dysrhythmia. Surgery may include:
  - Ablation surgery: A procedure in which your healthcare provider places a long, thin, flexible tube (catheter) into a blood vessel in your groin and up to your heart and uses electrical pulses to scar small areas of heart tissue. This causes the electrical activity of the heart to take a different path around the scars and to change the heartbeat to a normal rhythm.
  - Artificial pacemaker implantation: Surgery to place a device under your skin with small wires to your heart to help the heart maintain a regular beat. It is commonly used when your heart beats too slowly.
  - Implantable cardioverter-defibrillator (ICD): Surgery used to place a device under your skin with small wires to your heart to detect abnormal heart rhythms and shock the heart back to a normal rhythm
  - Maze procedure: Surgery to place several small cuts in the heart, which causes the electrical activity of the heart to take a different path around the scars and to change the heartbeat to a normal rhythm
  - Coronary artery bypass graft (CABG): Surgery in which a blood vessel from another part of your body is used to create a new route for blood to flow around a blockage in a heart artery caused by coronary artery disease
  - Heart valve repair or replacement: Surgery to repair or replace heart valves that are not working properly

## **What can I do to help?**

- You will need to tell your healthcare team if you have new or worsening:
  - Heart palpitations that feel like a sudden pounding, fluttering, or racing in the chest
  - Weakness
  - Dizziness
  - Fainting
  - Shortness of breath
  - Chest discomfort (pressure, fullness, squeezing or pain) that lasts more than a few minutes or goes away and comes back or chest discomfort that goes to your arms, neck, jaw or back
  - Fast, slow, or irregular heartbeat
  - Tiredness
  - Signs of infection around your surgical wound if you had surgery. These include:
    - The area around your wound is more red or painful
    - The wound area is very warm to touch
    - You have blood, pus, or other fluid coming from your wound area
    - You have chills or muscle aches
- Ask questions about any medicine or treatment or information that you do not understand.

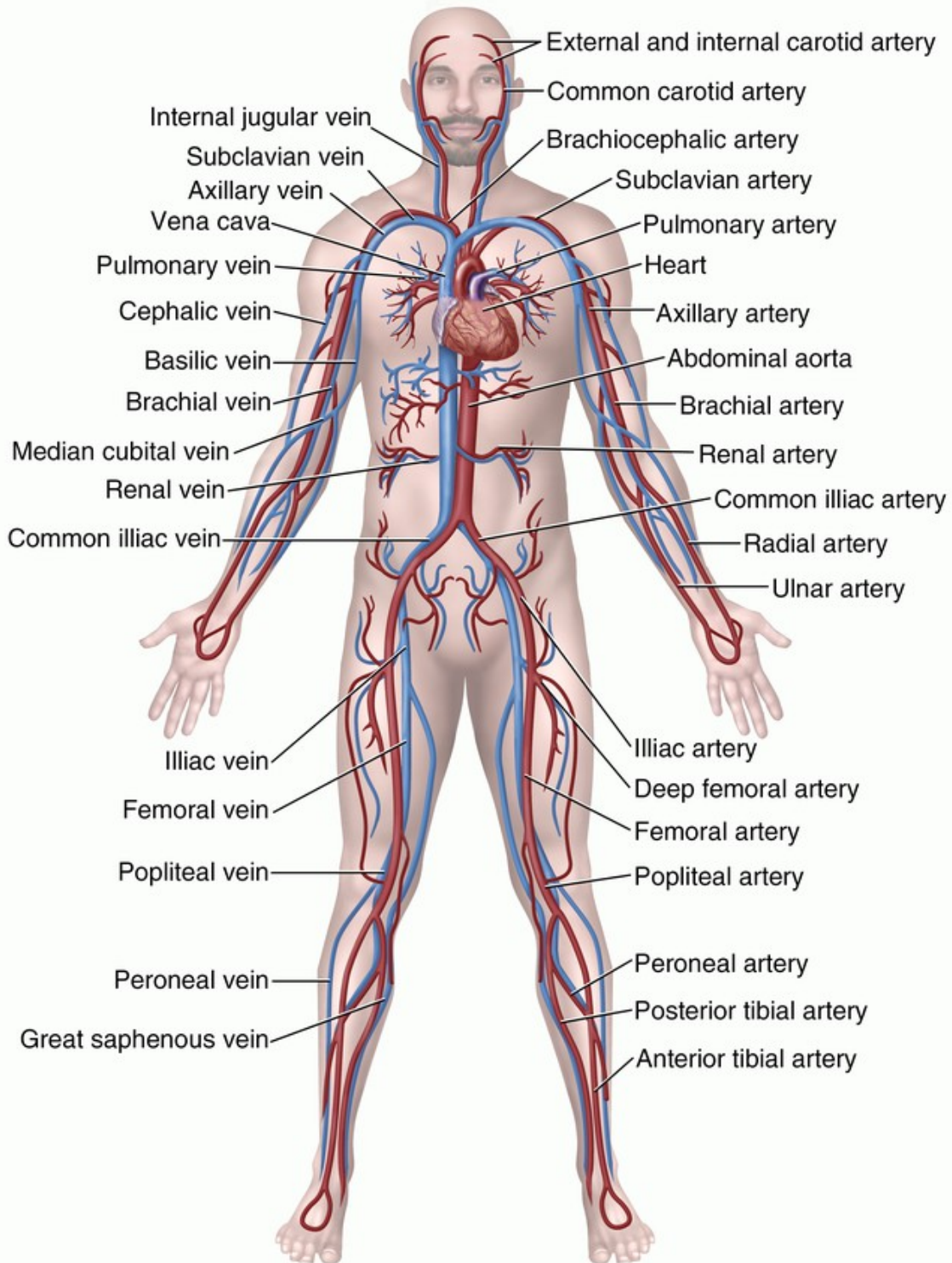
## **How long will I be in the hospital?**

How long you stay in the hospital depends on many factors. The average amount of time to stay in the hospital with an abnormal heart rhythm is 3 to 4 days.

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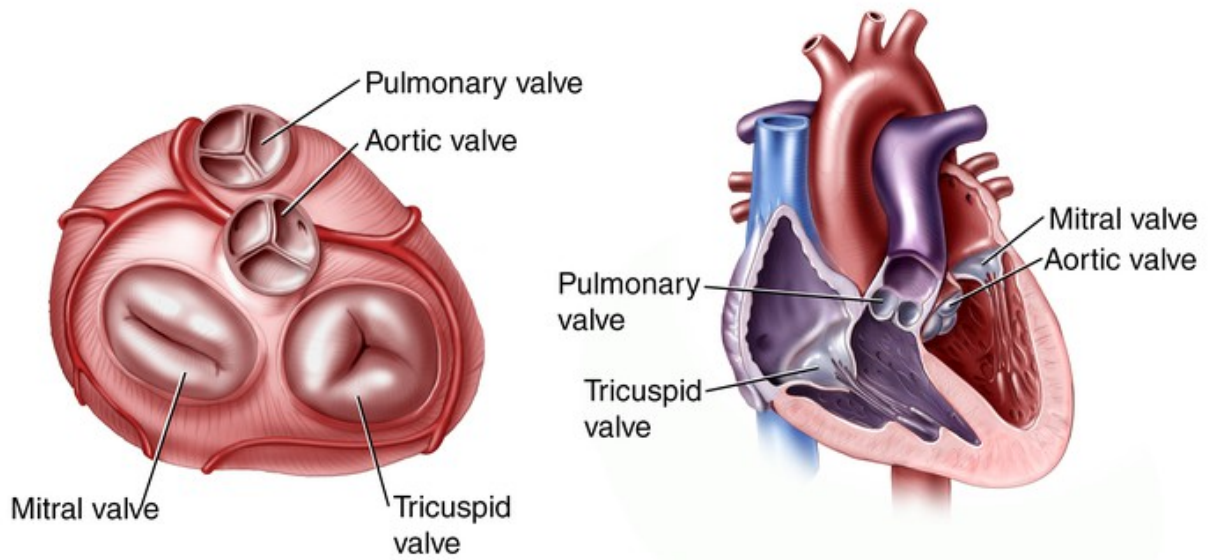
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# Circulatory System

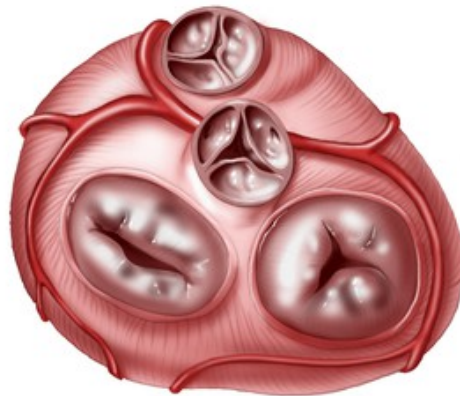


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# Normal and Diseased Heart Valves



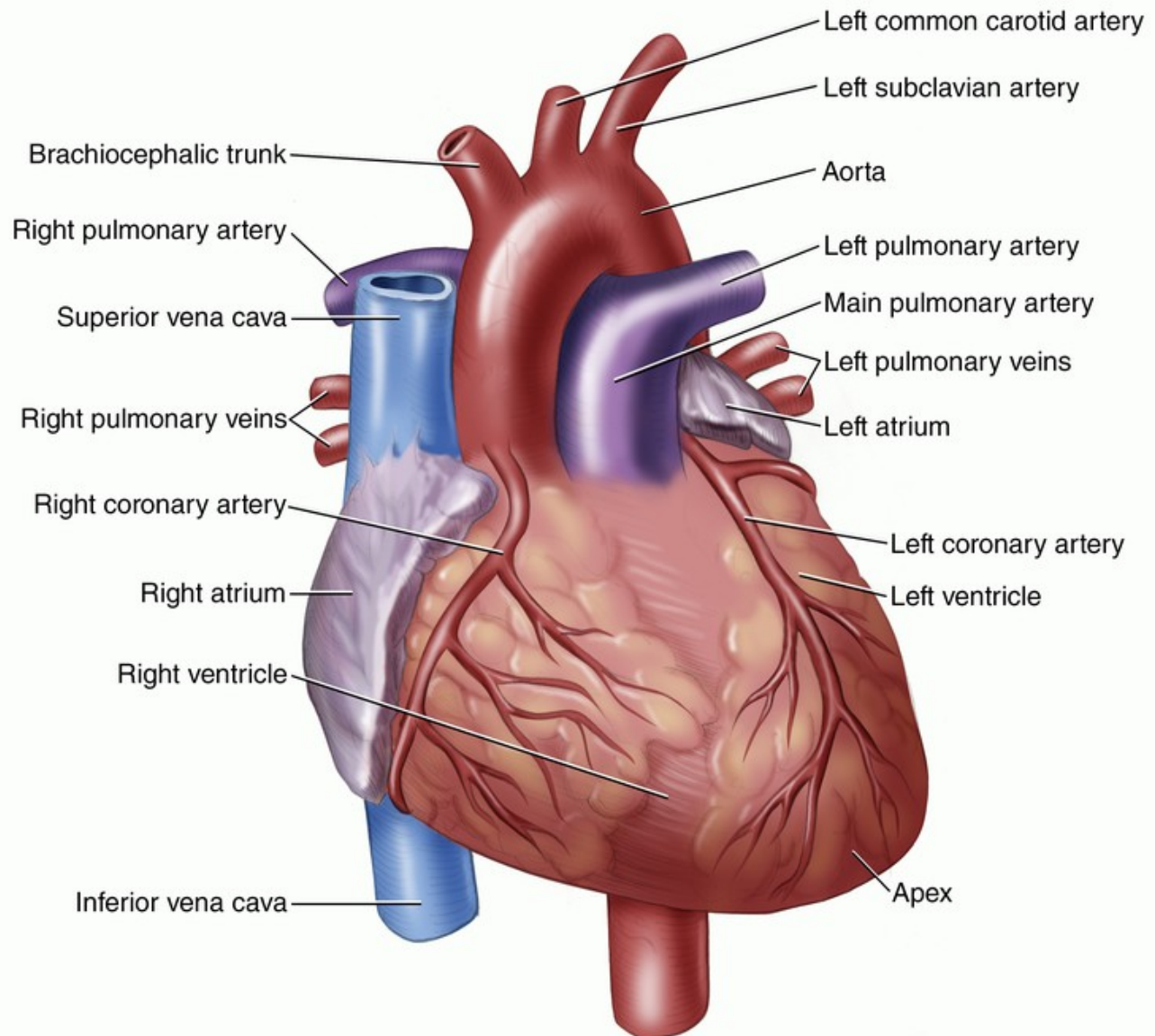
Normal Heart Valves



Diseased Heart Valves

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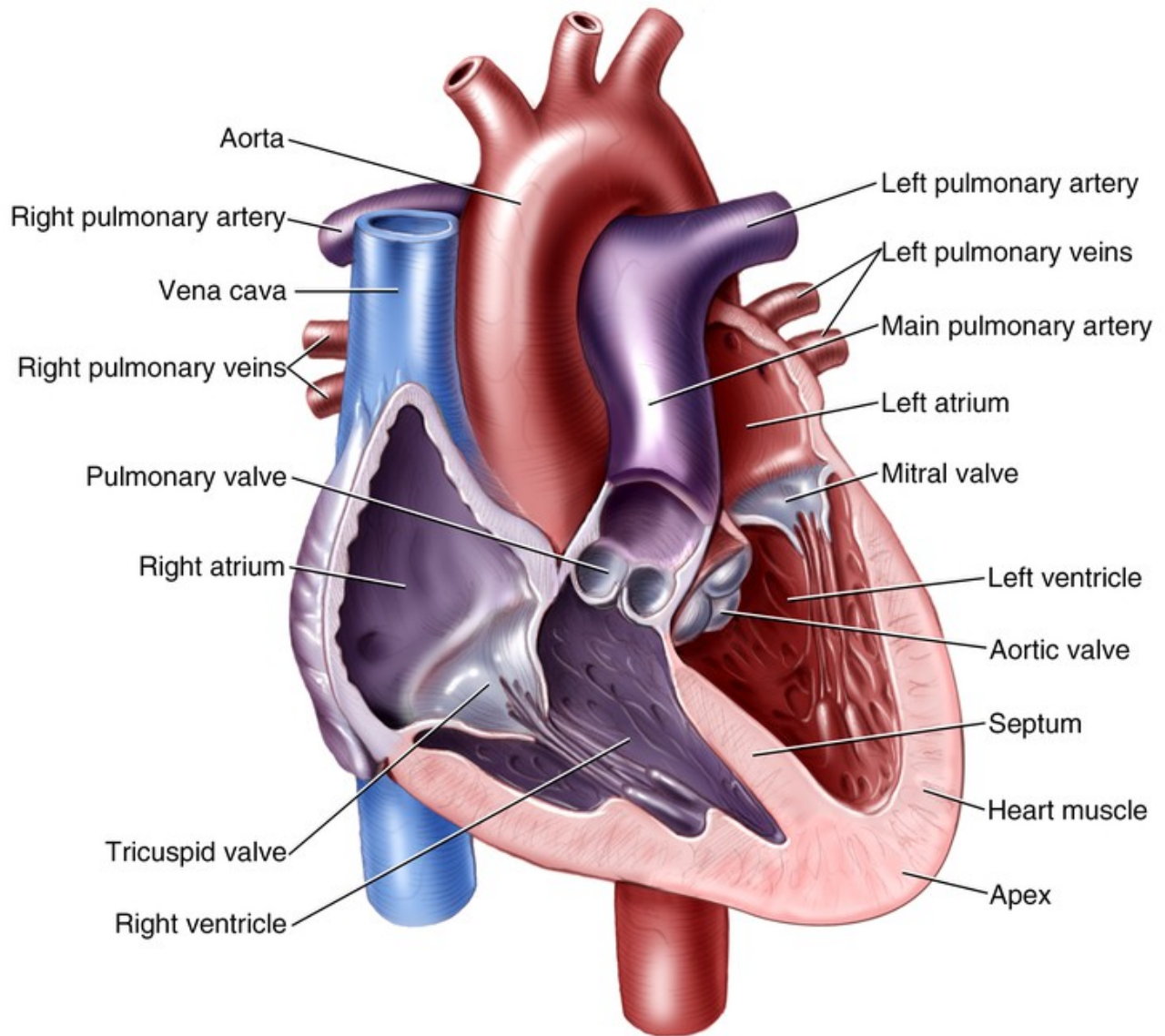
## Heart: External View



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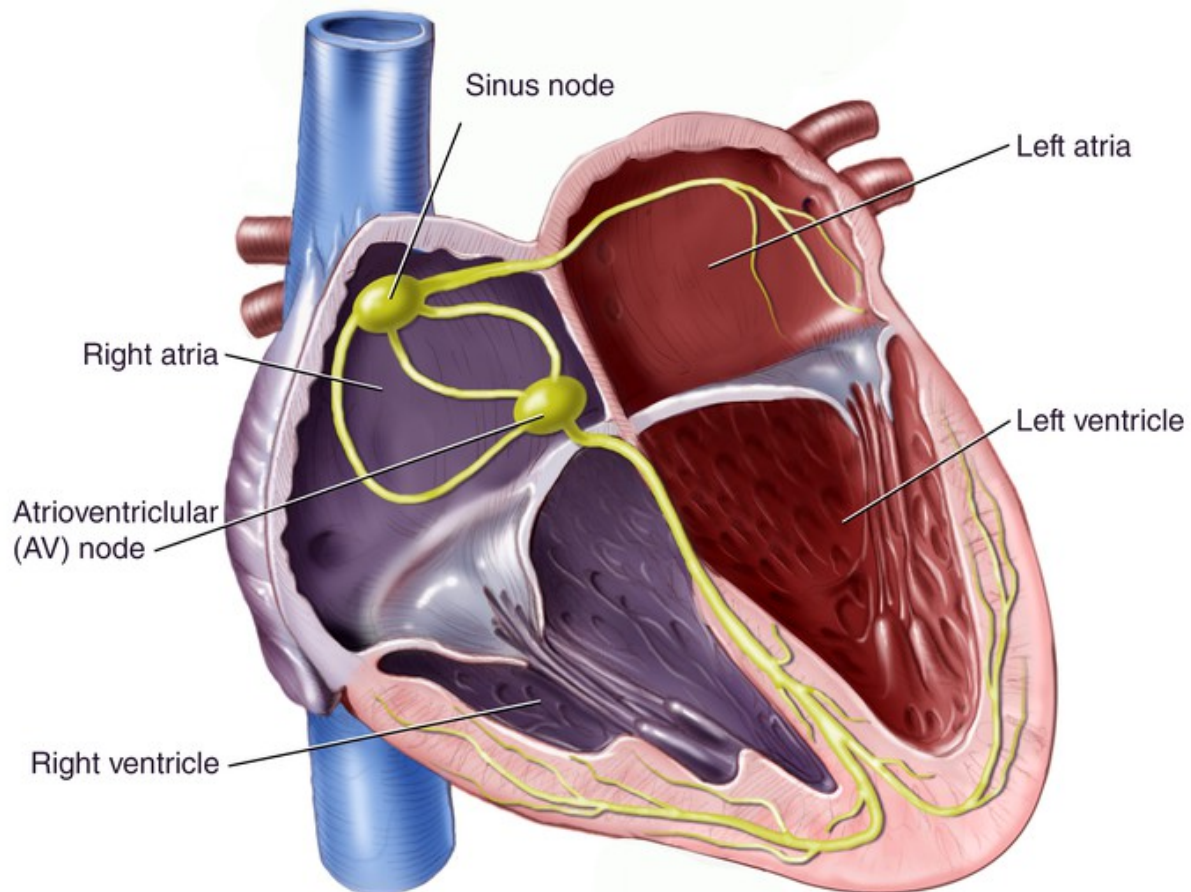
# Heart: Interior View



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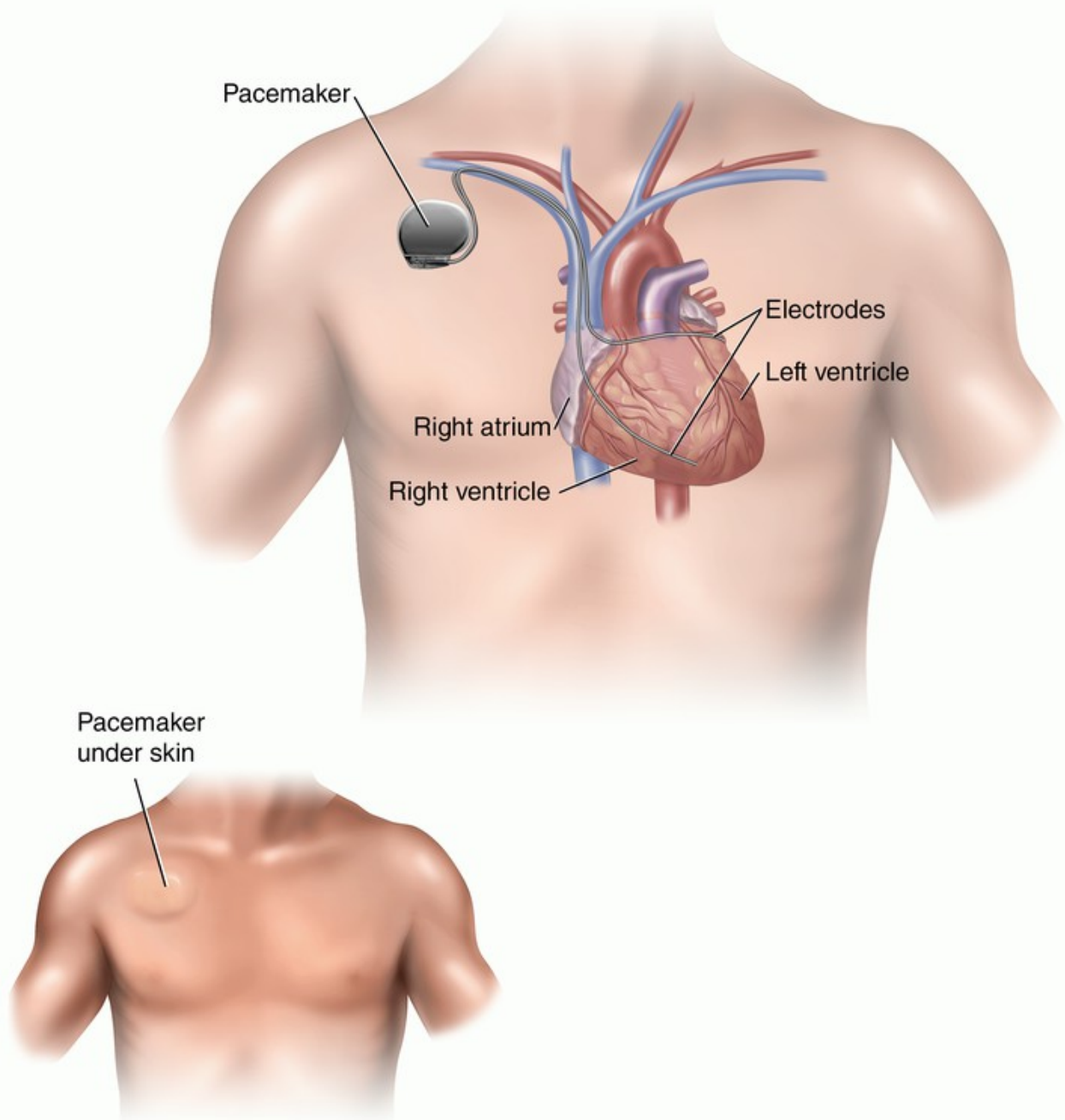
## Nodes Responsible for Cardiac Rhythm



The electrical impulse starts in the sinus node. It travels to both atria, causing them to contract, and triggers the AV node. The impulse travels from the AV node, stimulating contraction of the ventricles.

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# Pacemaker



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