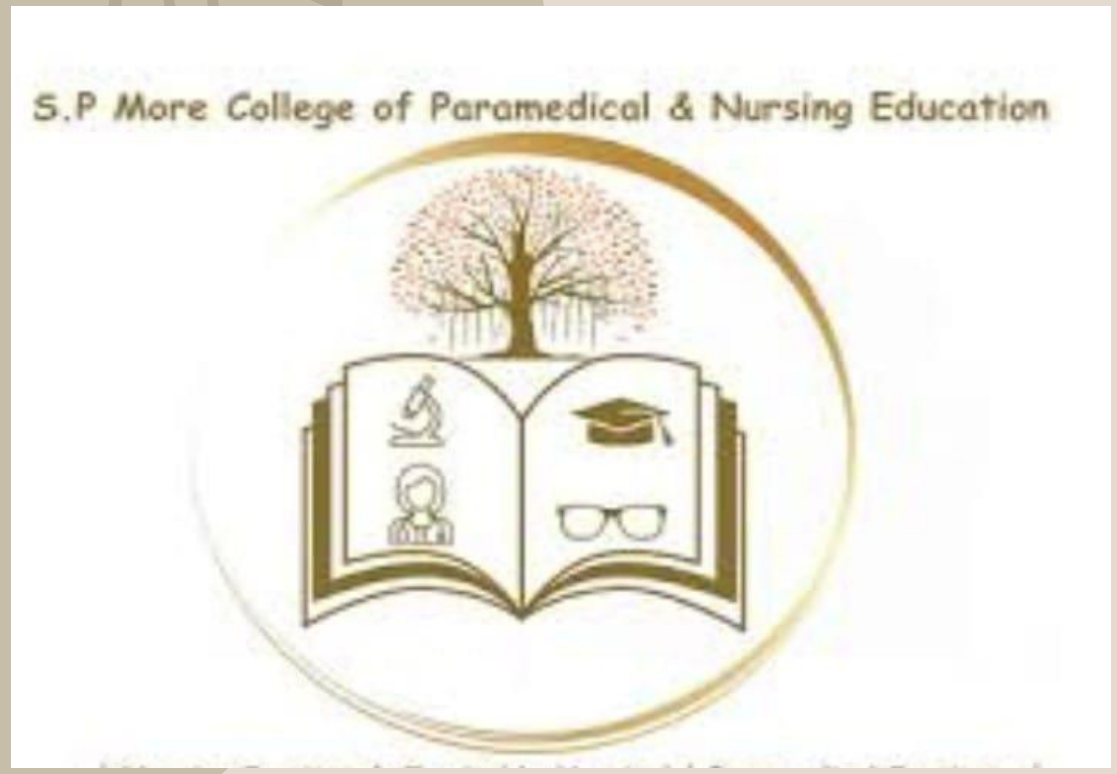
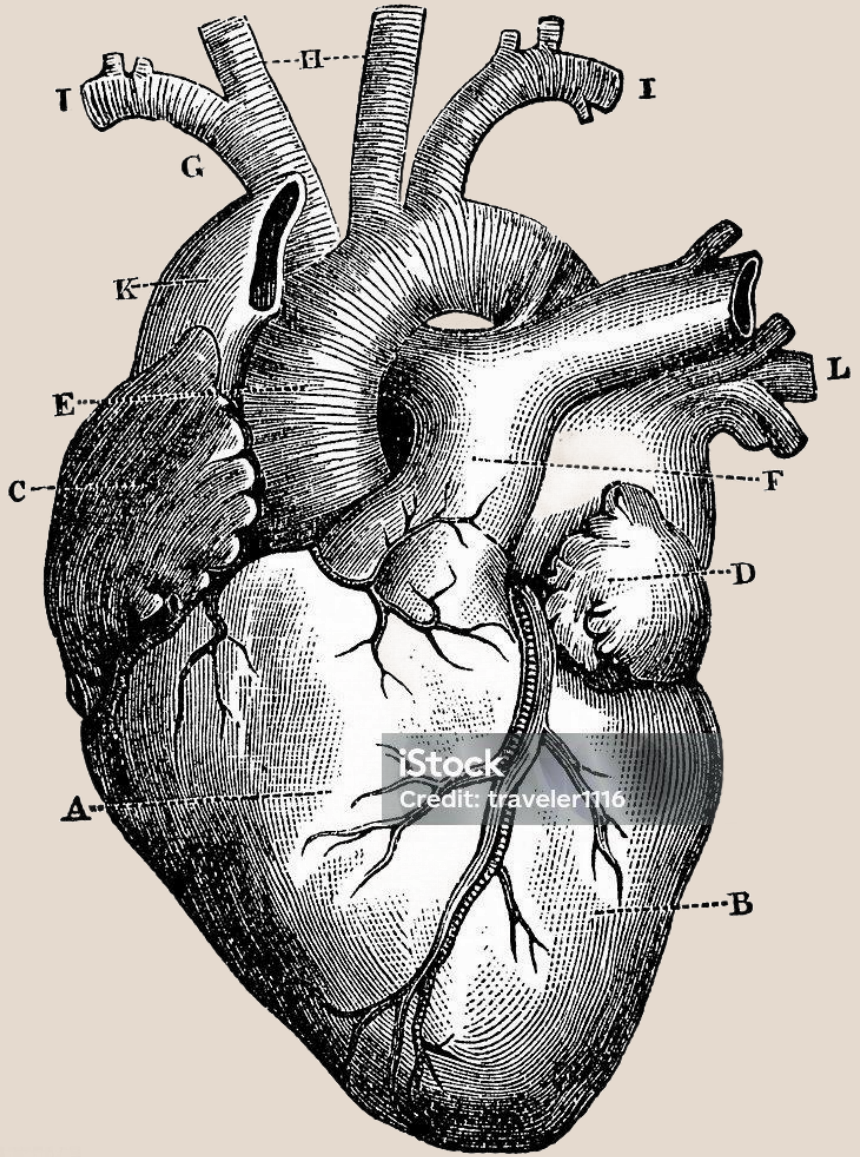


SIDDHI B SHUKLA {FY BPT}

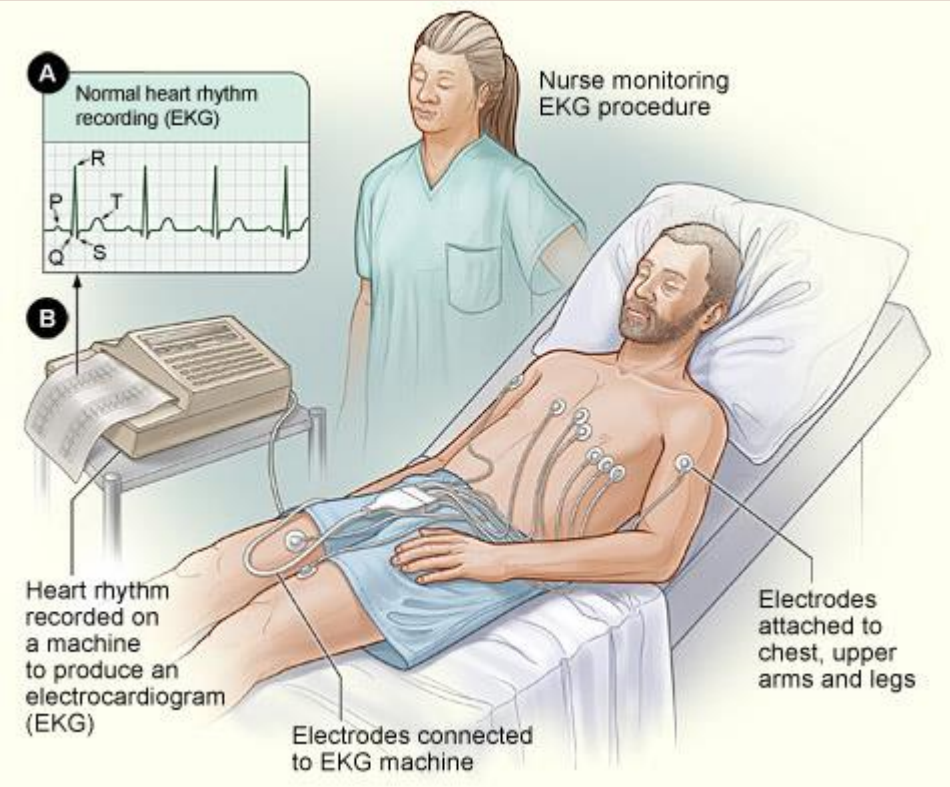
INTRODUCTION



What is an Electrocardiogram?

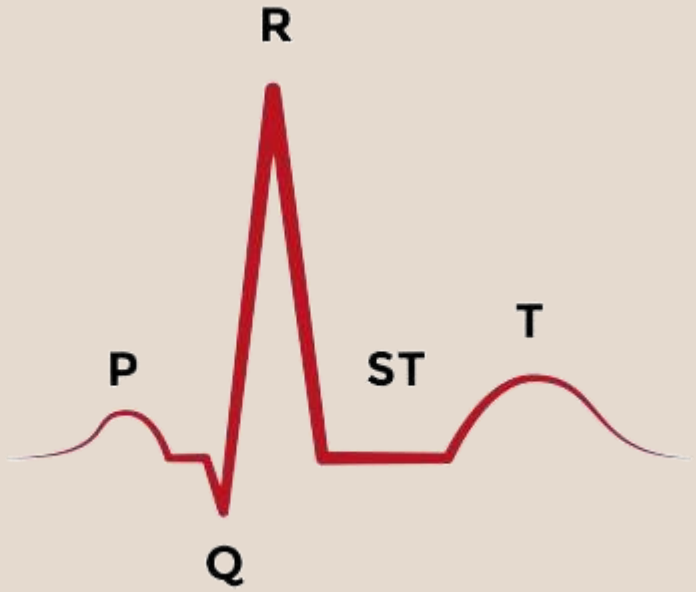
An ECG (Electrocardiogram) is a medical test that records the electrical activity of the heart. It helps doctors see how well the heart is working by capturing signals as the heart beats. The test involves placing small sensors (electrodes) on the skin, which detect the heart's electrical pulses. These pulses create a visual line on a screen or paper, showing the rhythm and strength of each heartbeat. Doctors can use an ECG to check for heart problems, like irregular heartbeats, and to monitor heart health over time.

PRINCIPLES OF ECG



- **HEART'S ELECTRICAL ACTIVITY:** THE HEART PRODUCES ELECTRICAL SIGNALS AS IT BEATS. THESE SIGNALS ARE WHAT MAKE THE HEART MUSCLES CONTRACT AND PUMP BLOOD.
- **DETECTION WITH ELECTRODES:** SMALL SENSORS CALLED ELECTRODES ARE PLACED ON THE SKIN, USUALLY ON THE CHEST, ARMS, AND LEGS. THESE DETECT THE HEART'S ELECTRICAL SIGNALS FROM DIFFERENT ANGLES.

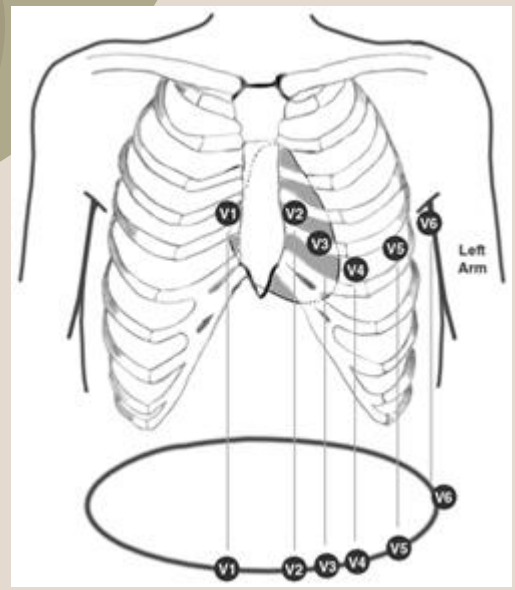
WAVES PATTERN



NORMAL ECG GRAPH

- The **P Wave** shows the upper chambers (atria) contracting.
- The **QRS Complex** shows the main pumping chambers (ventricles) contracting.
- The **T Wave** shows the ventricles relaxing and getting ready for the next beat.

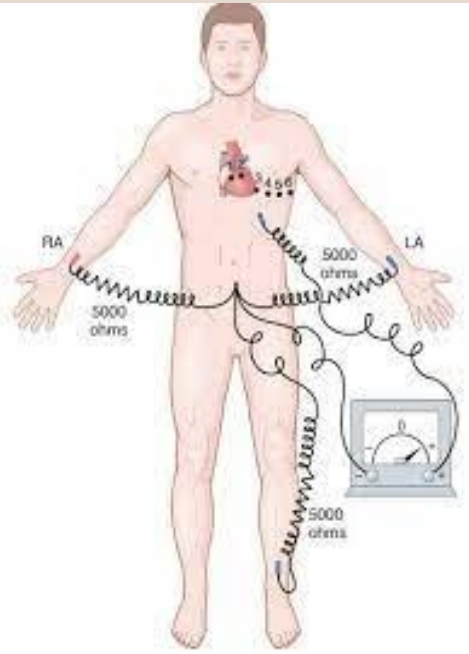
CHEST LEAD



CHEST (PRECORDIAL) LEADS: THESE MEASURE ELECTRICAL ACTIVITY ACROSS DIFFERENT PARTS OF THE CHEST, SHOWING A DETAILED VIEW OF THE HEART'S ACTIVITY.

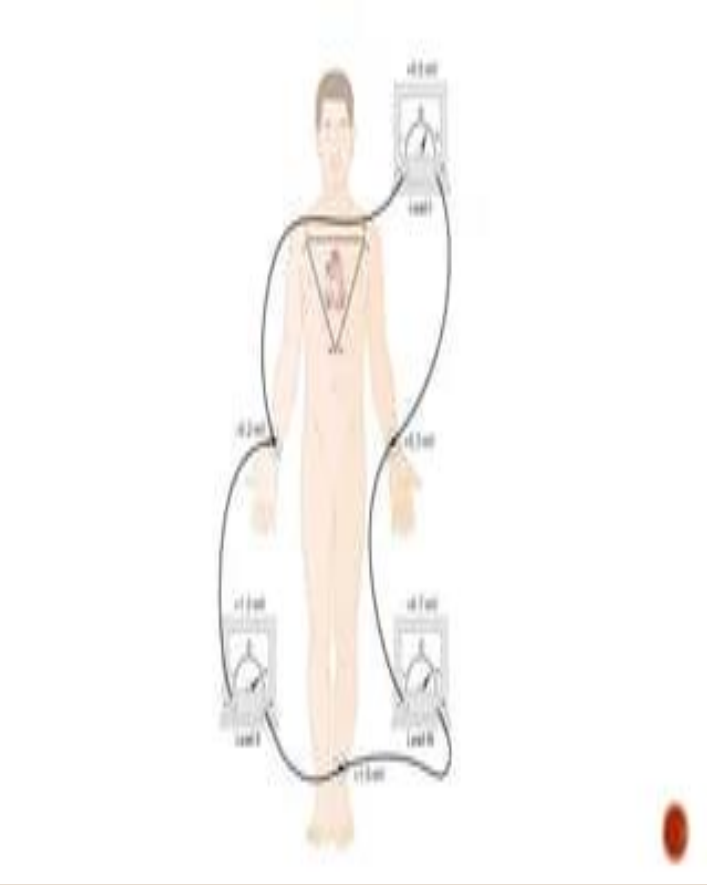
- V1: PLACED ON THE RIGHT SIDE OF THE CHEST, IN THE FOURTH SPACE BETWEEN RIBS.
- V2: PLACED ON THE LEFT SIDE OF THE CHEST, IN THE FOURTH SPACE BETWEEN RIBS.
- V3: PLACED BETWEEN V2 AND V4 ON THE LEFT SIDE.
- V4: PLACED IN THE FIFTH SPACE BETWEEN RIBS ON THE LEFT SIDE, DIRECTLY BELOW THE MIDDLE OF THE COLLARBONE.
- V5: PLACED AT THE SAME LEVEL AS V4 BUT FURTHER TO THE LEFT.
- V6: PLACED AT THE SAME LEVEL AS V4 AND V5 BUT EVEN FURTHER TO THE LEFT, NEAR THE SIDE OF THE BODY.

BIPOLAR LIMB LEADS



Bipolar Limb Leads are a part of an ECG (electrocardiogram) that measure the heart's electrical signals from three specific angles using electrodes placed on the arms and legs. They are called "bipolar" because each lead measures the difference in electrical activity between two points (one positive and one negative electrode).

The Three Bipolar Limb Leads



•**Lead I**: Measures the electrical activity between the **right arm (RA)** and the **left arm (LA)**.
•Right arm is the negative electrode.
•Left arm is the positive electrode.
•This lead gives a view across the top of the heart, from right to left.
•**Lead II**: Measures the electrical activity between the **right arm (RA)** and the **left leg (LL)**.
•Right arm is the negative electrode.
•Left leg is the positive electrode.
•This lead captures a view of the heart from the upper right to the lower left, often showing the strongest signal because it aligns with the heart's natural electrical pathway.
•**Lead III**: Measures the electrical activity between the **left arm (LA)** and the **left leg (LL)**.
•Left arm is the negative electrode.
•Left leg is the positive electrode.
•This lead provides a view from the left side of the heart, looking down.

Thank You