



Electrocardiogram Electrodes

Description

The ECG machine uses a series of devices called Electrodes to record the electrical activity of the heart. The Electrocardiogram Electrodes are placed in contact with the patient's skin on the arms, legs and in the thoracic region.

Location Electrocardiogram Electrodes

The location of the Electrodes is vital for an adequate reading and interpretation of the Electrocardiogram. The wrong placement of the Electrocardiogram Electrodes can generate from abnormal QRS to Cardiac Axis Deviations.

In a standard EKG there are a total of 10 Electrodes divided into 2 different groups; Peripheral and pericordial electrodes. It is important not to confuse the Electrodes of the Electrocardiogram with the Leads obtained. The correct location of the Electrocardiogram Electrodes may seem complicated at first, but here we will give you some tips so as not to fail in their placement.

Peripheral Electrodes

Peripheral Electrodes are those that are in contact with the patient's extremities. In total there are 4 Peripheral Electrodes, one for each one extremities. These electrodes mostly have the appearance of tweezers to encircle the limb on which they are placed.

Electrodos del Electrocardiograma
Peripheral
Electrodes

Although there are different codes and colors in certain electrocardiographs, most use the system of the international electrotechnical commission (IEC). Below we show you the extremitie and the electrode to place:

- Right Arm, the red Electrode must be placed with the letter or logo R (Right or right)

- Left arm goes the yellow one that has the mark or letter L (Left or Left)
- Left Leg is placed the green one, this usually has the letter F (Foot or Pie)
- Right Leg finally the black Electrode, which is marked with the letter N (Neutral)

It is important to bear in mind that when placing the Electrocardiogram Electrodes, bony prominences should be avoided. If the patient is missing any of the limbs, then the Electrode will be placed on the stump or region closest to the torso.

Precordial Electrodes

Unlike Peripheral Electrodes these are of the suction cup type. **The Perichordial Electrodes are placed in contact with the skin of the thorax.** It is important that the contact is as direct as possible. Sometimes the hair can cause interference with the electrical signal, so it may be necessary to shave the areas where the Electrocardiogram Electrodes are placed.

In a standard EKG there are a total of 6 Perichordial Electrodes. Numbered from 1 to 6 and preceded by the letter V. Each of these Electrodes has a specific location on the patient's chest.

Derivaciones precordiales

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Derivaciones precordiales

Below we detail the exact location of the Pericordial Electrodes:

- **V1:** It is placed in the 4th intercostal space (IE) to the right of the sternum, in the right parasternal line.
- **V2:** It should be placed in the 4th intercostal space (IE) to the left of the sternum, in the left parasternal line.
- **V3:** It must go between V2 and V4.
- **V4:** It must be in the 5th intercostal space. To the left of the sternum, in the mid clavicular line.
- **V5:** Like the previous one, it should be placed in the 5th intercostal space but in the anterior axillary line
- **V6:** It is located on the same horizontal line as V4 and V5, but it must be located in the mid-axillary line.

In certain cases such as posterior infarction, the V7, V8 and V9 electrodes are used to obtain the posterior leads. It is also possible to use another series of Electrodes called Right Electrodes to obtain

the Right Leads. The latter are especially useful for lower infarcts and dextrocardia or reverse situs.

It is important to always ensure the privacy of the patient. Especially when they are female patients. Sometimes it is not necessary to completely remove clothing such as a bra. If possible, it should always be sought to cover the patient with a blanket and for the patient to clean the electro-gel.

Tricks to place the Electrocardiogram Electrodes

Correctly positioning the EKG Electrodes can seem complicated as you have to memorize the exact location of each Electrode. However, there are certain tricks that will facilitate its placement.

Tricks for placing the Peripheral Electrodes

Traffic Light Trick

One of the simplest tricks to always remember where and which of the 4 peripheral electrodes to place at each end is to remember the colors of a Traffic Light (Red, Yellow and Green).

In the same order, the peripheral electrodes must be placed, always starting with the right arm and moving towards the left arm, then the left leg and lastly, we place the black electrode on the right leg.

Trick word Venerea

This is another very good trick to remember the location of the Electrocardiogram Electrodes. In this case, the word "VENEREA" encompasses the colors of the Peripheral Electrodes in a mnemonic way. "VE" refers to the green electrode. "NE" to the black electrode. "Re" to red electrode and "A" to yellow.

The way to place them would be to follow the limbs and form a square, starting with the left leg and moving from left to right.

Tips to place electrodes Pericordiales

Locate the 4th intercostal space

One of the most important aspects to be able to place the Pericordial Electrodes correctly is to locate the 4th intercostal space. To do this, it is best to locate the Angle of Louis. Which feels like a protrusion that sticks out of the sternum.

Electrodos del Electrocardiograma

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Image 1 – How to locate the 4th intercostal space

In Image 1 you can see the process of the technique. The Angle of Louis coincides with the 2nd intercostal space. From this point then we only have to go down to the 4th intercostal space. The intercostal spaces can be easily felt by palpating the difference with the solidity of the ribs.

Electrodes V1 and V2 are placed on the sides of the sternum. V1 to the right just where the sternum ends in the 4th intercostal space and V2 to the left of the sternum.

linea axilar

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Linea axilar anterior

Where to place V3?

The best way to place V3 is by placing Electrodes V2 and V4 first. V3 should go right in the middle of these two electrodes. Remember that V2 is placed in the 4th intercostal space while V4 is placed in the 5th intercostal space.

Location of V4 and V5

If it is difficult for you to find the exact location of the Electrocardiogram Electrodes, take certain reference points of the patient's body to facilitate the process.

V4 should be placed on the mid clavicular line, which generally coincides with the nipple. V4 is almost always located just below the patient's breast, following the line of the nipple.

V5 is placed on the anterior axillary line. To locate this point, you just have to draw a straight line just where the armpit begins and place the Electrode on the same line as V4 ..

Category

1. Electrocardiogram

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