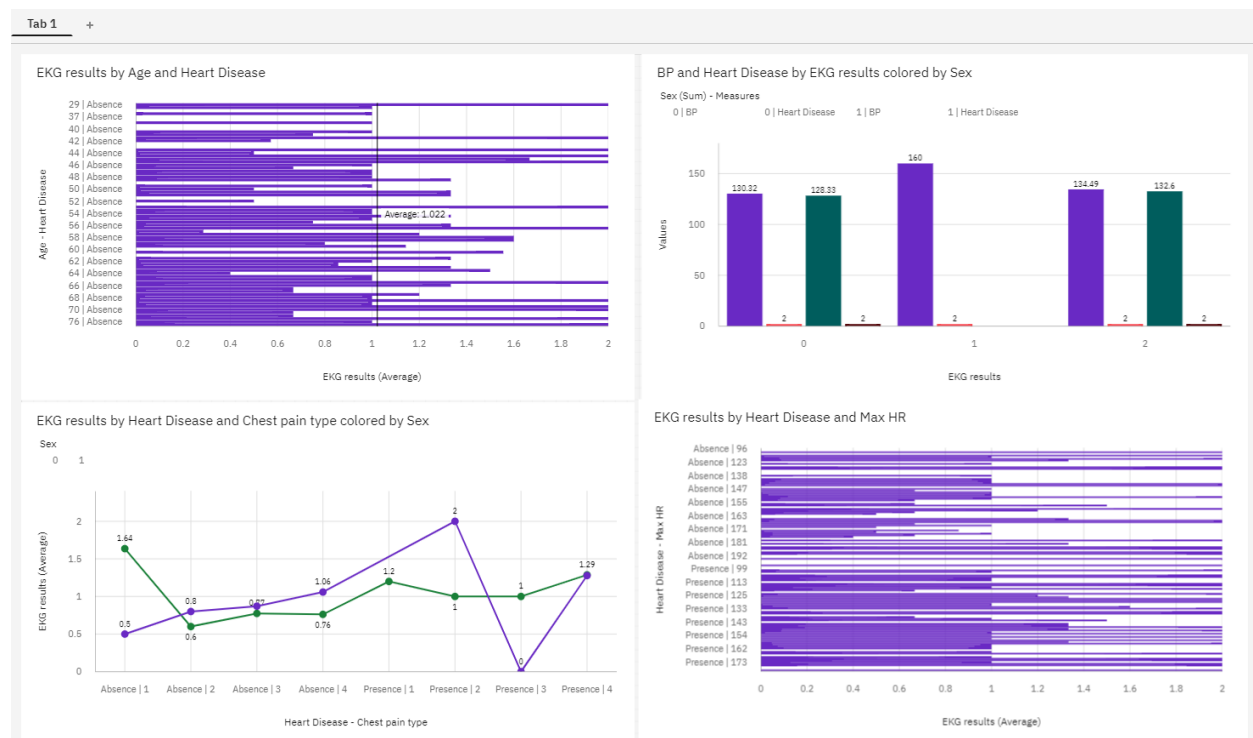


PROJECT DEVELOPMENT PHASE

DATE	31.10.2022
TEAM ID	PNT2022TMID27115
PROJECT NAME	Visualizing and Predicting Heart Disease with an Interactive Dash Board

SPRINT 3: EKG (Electrocardiogram)



INTRODUCTION:

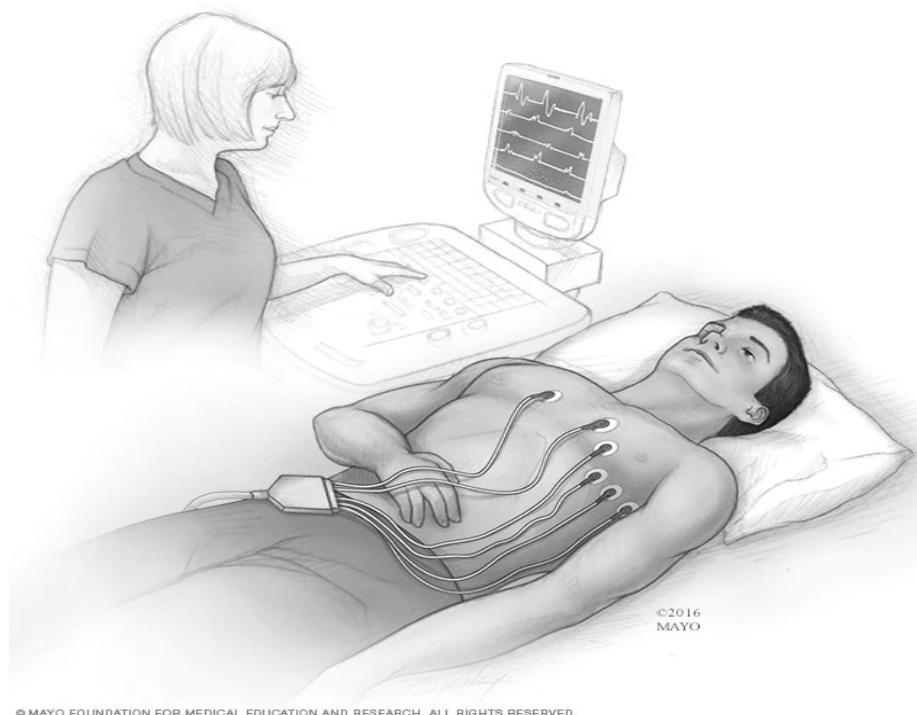
An electrocardiogram (EKG/ECG) uses temporary electrodes on your chest and limbs to monitor, track and document your heart's electrical activity (which controls your heartbeats) for diagnostic purposes. A computer translates the information into a wave pattern your healthcare

provider can interpret. This is a quick, noninvasive test that doesn't hurt. You can get an EKG while lying down and resting or while you're exercising as part of a stress test.

An EKG test is an easy way to get information to diagnose a problem with your heart. It doesn't take long and doesn't cause pain, but an electrocardiogram test can tell your healthcare provider if you've had a heart attack, heart failure or heart damage. It can also tell them if your heart rhythm isn't normal or how well your pacemaker is working.

What does an electrocardiogram show?

An electrocardiogram (EKG) records the electrical signal from your heart to check for different heart conditions. Electrodes are placed on your chest to record your heart's electrical signals, which cause your heart to beat.



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TYPES OF EKG:

There are three main types of EKG

Resting ECG- carried out while you're lying down in a comfortable position

Stress or Exercise ECG- carried out while you're using an exercise bike or treadmill

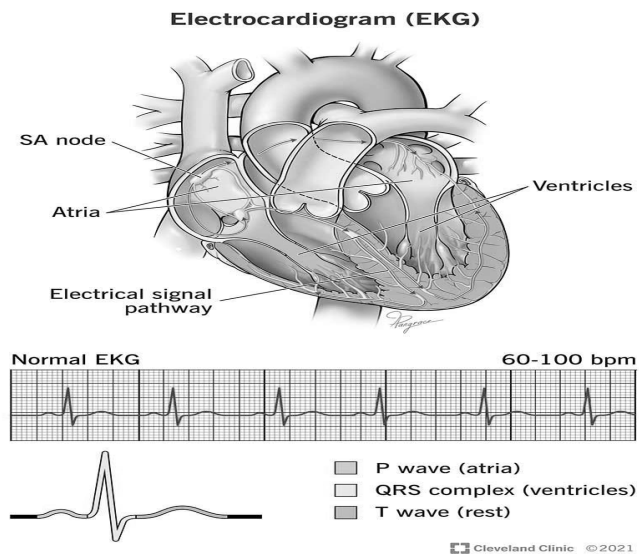
Ambulatory ECG- the electrodes are connected to a small portable machine worn at your waist so heart can be monitored at home for 1 or more days.

HOW TO READ AN EKG?

How much time passes between the different waves or peaks that represent the electrical impulses.

1. Your upper heart chambers (atria), where your heartbeats start, create the first wave, or "P wave."
2. Your lower heart chambers (ventricles) create the next wave, called a QRS complex.

3. The third wave, shows your heart at rest or recovering after beating.



EKG showing heartbeat frequency and duration.

What is an ECG vs. EKG?

Both terms mean the same thing: an electrocardiogram. EKG comes from the German word, which uses “k” instead of “c” in both parts of the word. However, it’s different from an echocardiogram, which is an ultrasound that creates images of your beating heart.

When would an EKG be used?

Your healthcare provider uses an EKG to:

- Assess your heart rhythm to see if it’s normal or if you have arrhythmia.
- Diagnose poor blood flow to your heart muscle (ischemia) because of coronary artery disease.
- Diagnose a heart attack.

- Diagnose abnormalities of your heart, such as heart chamber enlargement and abnormal electrical conduction.
- Make sure you're fit for an upcoming surgery.

They can also check on how your heart is doing since you:

- Got a pacemaker.
- Started taking medication for heart disease.
- Had a heart attack.

Symptoms you can diagnose with an EKG

Your provider may give you an EKG test because you have:

- Chest pain.
- Shortness of breath.
- Dizziness.
- A fast heartbeat.

Who performs an EKG?

A healthcare provider who's a heart expert (cardiologist) usually orders or performs an EKG. However, other providers can give you this test, especially if you're in an ambulance or an emergency room instead of at a scheduled appointment. You can get an EKG in your provider's office, at a hospital or at an outpatient facility.

How does an EKG work?

Electrodes or sensors your provider puts on your chest, legs and arms send information through wires to a computer that uses the data to make a wave chart. This shows the electrical activity that's happening in your heart.

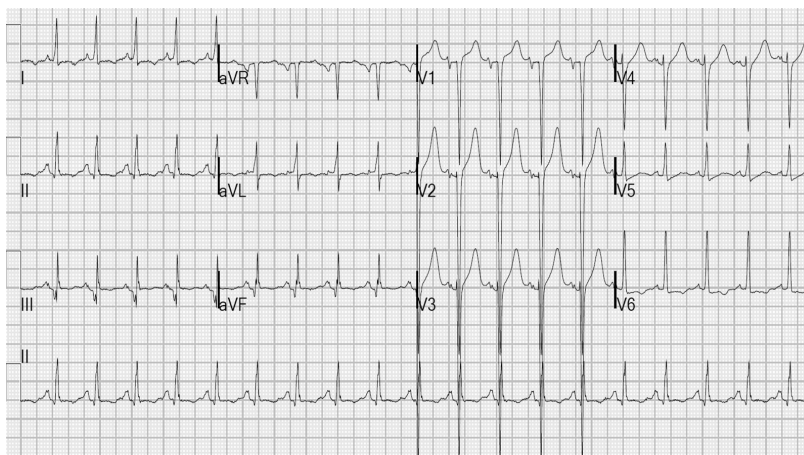
How do I prepare for an EKG test?

Before an EKG, you can eat and drink like you normally would. However, you'll want to keep the following in mind before you get dressed on the day of your EKG test:

- Avoid oily or greasy skin creams and lotions the day of the test. They interfere with electrodes making good contact with your skin.
- Avoid full-length hosiery, as electrodes need to be placed directly on your legs.
- Wear a shirt that you can remove easily to place the leads on your chest.

What to expect on the date of the EKG test ?

A healthcare provider will attach 12 electrodes with adhesive pads to the skin on your chest, arms and legs. To allow a better connection, your provider may shave hair that's in the way. It takes about 10 minutes to attach the electrodes and complete the test, but the actual recording takes only a few seconds.



What to expect during an electrocardiogram test ?

- For a resting EKG, you'll lie flat and relax while the computer creates a picture, on graph paper, of the electrical impulses traveling through your heart. If you're doing a stress test, you'll be walking on a treadmill during the test.

- The electrodes will stay on your skin until the EKG test is done. You won't feel anything different when the electrodes are communicating with the computer.

What to expect after an electrocardiogram test ?

Your healthcare provider will remove all of the sticky electrode patches and you can return to your normal activities.

What are the risks of an EKG test?

An EKG is a low-risk test. It doesn't use radiation or put electricity into your skin. You might have some skin irritation after your healthcare provider removes the sticky patches that were attached to the sensors.

RESULTS AND FOLLOW-UP

What type of results do you get and what do the results mean?

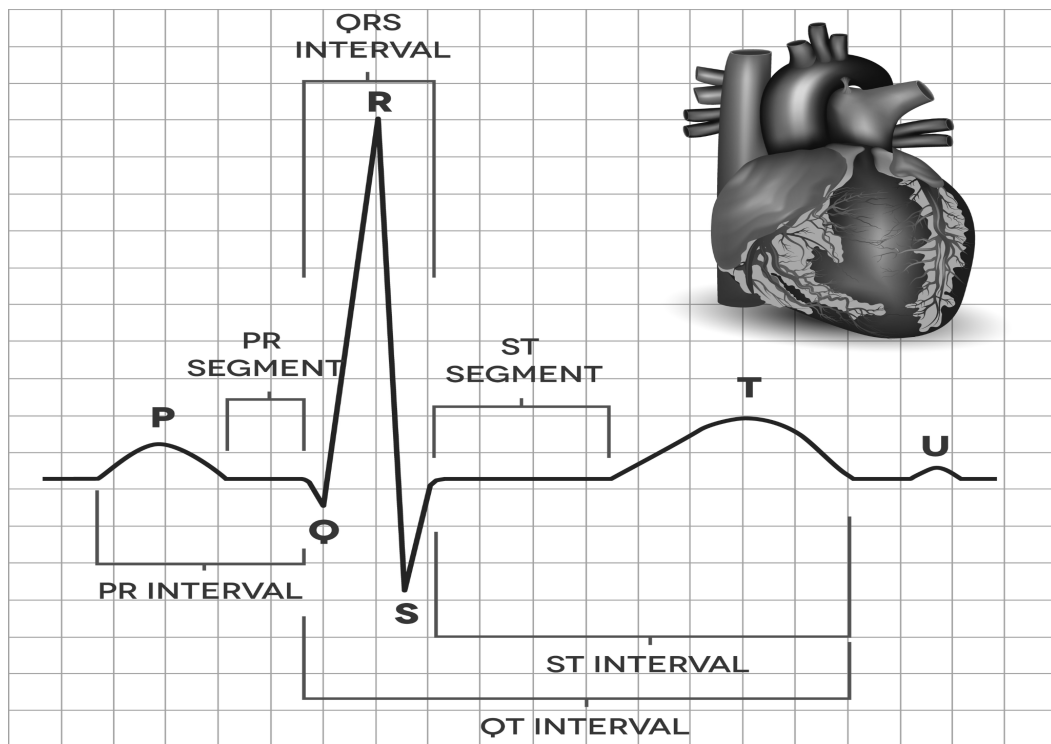
Your EKG results may show that you have:

- A heart rhythm that's irregular, too fast or too slow.
- A heart attack (past or present).
- Heart walls that are getting thicker (cardiomyopathy) or stretched out (aneurysm).
- A problem getting enough blood to your heart.
- Heart failure.

When should I know the results of the test?

-If your healthcare provider is able to review your EKG test results right away, they may speak to you soon afterward. This is especially true in an emergency situation when you may need immediate treatment.

-If your electrocardiogram test is more routine or part of a group of tests before noncardiac surgery, you may not hear from your provider for a few days. Your provider will keep your EKG records on file to compare with future ones.



Risks:

An electrocardiogram is a safe procedure. There is no risk of electrical shock during the test because the electrodes used do not produce electricity. The electrodes only record the electrical activity of the heart.

You may have minor discomfort, similar to removing a bandage, when the electrodes are removed. Some people develop a slight rash where the patches were placed.

How you prepare?

No special preparations are necessary for a standard electrocardiogram. Tell your health care provider about any medications and supplements you take. These can often affect the results of an ECG.

What you can expect?

An electrocardiogram can be done in a health care provider's office or hospital.

Before:

- You may be asked to change into a hospital gown. If you have hair on the parts of your body where the electrodes will be placed, the care provider may shave the hair so that the patches stick.

- Once you're ready, you'll typically be asked to lie on an examining table or bed.

During:

-During an ECG, up to 12 sensors (electrodes) are attached to the chest and limbs. The electrodes are sticky patches with wires connect to a monitor. They record the electrical signals that make the heart beat. A computer records the information and displays it as waves on a monitor or on paper.

-You can breathe during the test, but you will need to lie still. Make sure you're warm and ready to lie still. Moving, talking or shivering may interfere with the test results. A standard ECG takes a few minutes.

After:

You can typically return to your usual activities after your electrocardiogram.

Results:

Your health care provider might discuss results with you the same day as your electrocardiogram or at your next appointment.

ECG results can give a health care provider details about the following:

- Heart rate. Usually, heart rate can be measured by checking the pulse. An ECG may be helpful if your pulse is difficult to feel or too fast or too irregular to count accurately. An ECG can help identify an unusually fast heart rate (tachycardia) or an unusually slow heart rate (bradycardia).
- Heart rhythm. An ECG can detect irregular heartbeats (arrhythmias). An arrhythmia may occur when any part of the heart's electrical system doesn't work properly.
- Heart attack. An ECG can show evidence of a previous heart attack or one that's currently happening. The patterns on the ECG may help determine which part of the heart has been damaged, as well as the extent of the damage.
- Blood and oxygen supply to the heart. An ECG done while you're having symptoms can help your health care provider determine whether reduced blood flow to the heart muscle is causing the chest pain.
- Heart structure changes. An ECG can provide clues about an enlarged heart, heart defects and other heart problems.

If results show a heart rhythm problem, you may need another ECG or other test, such as an echocardiogram. Treatment depends on what's causing your signs and symptoms.