

## Diagnostic Techniques and Instruments of Heart Diseases

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### DESCRIPTION

Diagnostic techniques and instruments for heart diseases have evolved significantly over the years, with advancements in technology allowing for more accurate and efficient diagnosis. The following are some of the diagnostic techniques and instruments commonly used in the evaluation of heart diseases.

#### Electrocardiogram (ECG or EKG)

This is a non-invasive test that records the electrical activity of the heart. It is used to diagnose abnormal heart rhythms, heart attacks, and other heart problems. The test is performed by placing electrodes on the chest, arms, and legs, which are connected to a machine that records the electrical impulses of the heart.

#### Echocardiography

This is a non-invasive test that uses ultrasound waves to create images of the heart. It is used to diagnose heart valve problems, heart muscle problems, and other heart conditions. The test is performed by placing a small device on the chest, which emits ultrasound waves that bounce off the heart and create images that can be viewed on a screen.

#### Stress test

This is a test that evaluates the heart's response to physical activity or stress. It is used to diagnose heart disease and to determine the effectiveness of treatment. The tests are performed by having the patient walk on a treadmill or ride a stationary bike while monitoring their heart rate, blood pressure, and other vital signs.

#### Cardiac catheterization

This is an invasive test that involves the insertion of a catheter into a blood vessel that leads to the heart. It is used to diagnose heart valve problems, heart muscle problems, and other heart conditions. During the test, a dye is injected into the blood vessels that help to visualize the heart and its blood flow.

#### Coronary angiography

This is a test that uses X-rays and dye to visualize the blood vessels of the heart. It is used to diagnose blocked arteries in the heart, which can cause heart attacks and other heart problems. During the test, a catheter is inserted into a blood vessel in the groin or arm and threaded up to the heart, where dye is injected to highlight the blood vessels.

#### Magnetic resonance imaging

This is a non-invasive test that uses a strong magnetic field and radio waves to create images of the heart. It is used to diagnose heart valve problems, heart muscle problems, and other heart conditions. The test is performed by placing the patient inside a large tube-like machine that emits the magnetic field and radio waves.

#### Computed tomography scan

This is a non-invasive test that uses X-rays to create images of the heart. It is used to diagnose heart valve problems, heart muscle problems, and other heart conditions. The test is performed by having the patient lie on a table that slides into a machine that emits the X-rays.

#### Blood tests

These tests are used to measure various substances in the blood that can indicate heart disease. For example, elevated levels of cholesterol and triglycerides can indicate a higher risk of heart disease, while elevated levels of troponin, a protein released by damaged heart muscle, can indicate a heart attack.

In addition to these diagnostic techniques and instruments, there are also various procedures and techniques used in the treatment of heart diseases.

#### Angioplasty and stenting

This is a procedure used to open blocked arteries in the heart. A balloon catheter is inserted into the blocked artery and inflated

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to widen the artery. A small metal mesh tube, called a stent, is often placed in the artery to help keep it open.

### **Coronary Artery Bypass Graft (CABG) surgery**

This is a surgical procedure used to reroute blood flow around blocked arteries in the heart. During the procedure, a healthy

blood vessel from another part of the body is grafted onto the coronary artery above and below the narrowed area or blockage.