

# Medical Procedure for Diagnosis and Treatment of Cardiac Catheterization

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# DESCRIPTION

Cardiac catheterization is a medical procedure used to diagnose and treat cardiovascular diseases. During the procedure, a thin, flexible tube called a catheter is inserted into an artery or vein in the groin, neck, or arm and then guided to the heart. Once the catheter is in place, various measurements can be taken, and interventions can be performed if needed.

#### Indications for cardiac catheterization

Cardiac catheterization is performed for a variety of reasons, including:

**Diagnosis of heart disease:** The procedure can help diagnose the presence and severity of blockages in the coronary arteries that supply blood to the heart muscle.

**Evaluation of heart function:** Catheterization can measure the pressures inside the heart's chambers and the amount of blood pumped with each heartbeat. These measurements can help assess the heart's ability to function properly.

**Treatment of heart disease:** Cardiac catheterization can also be used to perform procedures to treat certain heart conditions. For example, a balloon catheter can be used to open up a blocked artery, and a stent can be placed in the artery to keep it open.

#### Preparation for cardiac catheterization

Before the procedure, the patient will undergo a thorough physical examination and medical history review. Blood tests may also be performed to assess kidney function, clotting ability, and other factors that may affect the procedure.

The patient will be asked to fast for a period of time before the procedure. They may also be asked to discontinue certain medications that could interfere with the procedure, such as blood thinners.

The patient will be given sedation to help them relax during the procedure. The sedative may be administered orally, intravenously, or both. The patient will be awake during the procedure but may not remember it later.

## The cardiac catheterization procedure

Cardiac catheterization is typically performed in a cardiac catheterization laboratory (cath lab). The patient will lie on a table, and a nurse will insert an intravenous (IV) line into their arm. Electrodes will be placed on the chest to monitor the heart's rhythm. The area where the catheter will be inserted (usually the groin) will be cleaned and numbed with a local anesthetic. The doctor will then make a small incision in the skin and insert the catheter into the artery or vein. Using fluoroscopy (a type of X-ray imaging), the doctor will guide the catheter through the blood vessels to the heart. Once the catheter is in place, various measurements can be taken, such as:

**Coronary angiography:** Dye is injected through the catheter into the coronary arteries, and X-rays are taken to visualize the arteries and identify any blockages.

**Ventriculography:** Dye is injected into the heart's chambers to visualize the heart's function and identify any abnormalities.

**Pressure measurements:** Catheters can measure the pressure inside the heart's chambers and the blood vessels leading to and from the heart.

If blockages are identified during the procedure, the doctor may perform an intervention, such as:

**Angioplasty:** A balloon catheter is used to open up a blocked artery.

**Stenting:** A stent (a small mesh tube) is placed in the artery to keep it open.

**Atherectomy:** A catheter with a rotating blade or laser is used to remove plaque buildup in the artery.

#### **Risks and complications**

Like any medical procedure, cardiac catheterization carries some risks and potential complications. These can include:

- Bleeding or bruising at the site of catheter insertion
- Infection at the site of catheter insertion
- Damage to the artery or vein where the catheter was inserted.

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