

Information to patient/parents on cardiac catheterization & related procedures

What is Cardiac Catheterization?

Cardiac catheterization is a form of minimal invasive procedure to help in making diagnosis and assessing the severity of the heart disease. Patients with certain kinds of heart disease can also be treated by interventional cardiac catheterization.

Patient will undergo cardiac catheterization with local or general anesthesia in Hybrid Cardiac Catheterization Laboratory. Cardiologist will insert catheters into blood vessels and heart chambers via percutaneous puncture at groin/ neck/ arm regions to take blood samples, record pressure, have imaging at various sites, or take biopsy of heart muscle to assess the heart condition. For interventional cardiac catheterization, devices such as balloon catheters/ ablation catheters/ occluders/ stents, etc will be inserted into blood vessels & heart chambers for treatment.

The patient's vital signs such as electrocardiogram, saturated oxygen level and blood pressure will be monitored continuously by cardiologists, anesthetists & nurses during the whole procedure. Some patients will require Transesophageal Echocardiogram to have a more detailed imaging of heart to assist in the cardiac catheterization.

Risks and Complications of Cardiac Catheterization

The followings are the **potential complications** that may develop during cardiac catheterization:

- Wound bleeding
- Transient bruise, hematoma
- Femoral artery aneurysm
- Femoral arteriovenous fistula (rare)
- Blockade/ tear of blood vessels
- Infection
- Anaphylaxis/ allergy reaction to drugs or contrast agent
- Myocardial infarction
- Embolism of blood clot or air
- Stroke
- Shock
- Sudden high blood pressure in lung vessels (pulmonary hypertension crisis)
- Perforation of the heart chamber
- Cardiac tamponade
- Damage to heart valves
- Nerve damage
- Kidney damage
- Abnormal heart rhythm, eg. heart block, abnormal slow or fast heart rate
- Potential adverse effect of radiation
- Displacement of implanted devices and hemolysis (damage to blood cells)

The list of complications is not exhaustive and other unforeseen complications may occasionally occur. Our team will immediately provide appropriate management accordingly. Severe complications may be **life-threatening and can cause death**, the death rate from diagnostic cardiac catheterization or electrophysiological study is less than 1%.

However, the risk of procedure will be increased with the following conditions:

- Patient with **unstable or critical heart conditions**, e.g. severe heart failure, cyanosis or pulmonary hypertension
- Patient **younger than 12 months** or with **low body weight**
- For all interventional cardiac catheterization

There will be **risk of radiation** during cardiac catheterization, please **inform medical staff if you think your child is pregnant**.

Preparation for Cardiac Catheterization

1. Children undergoing cardiac catheterization will be arranged to visit Ambulatory Care Centre few weeks before the procedure for assessment. Simple tests such as electrocardiogram, chest X ray, blood tests and cardiac ultrasound will be performed. Cardiac doctors will explain the purpose, risks and possible complications of the procedure to the parents and sign consent for cardiac catheterization. Anaesthetist will also perform pre-anaesthesia assessment in out-patient clinic and sign consent for anaesthesia.
2. If the procedure is an interventional cardiac catheterization, the hospital will charge patients for the expenses of catheters and devices. Medical Social Worker will be referred to assess the eligibility for subsidy application if they have financial difficulty.
3. The patient will be admitted to Cardiology Ward one day before procedure for pre-cardiac catheterization preparation.
4. Patient will need fasting before the procedure. We will remind patient and parents for the fasting time as indicated by Anaesthetist.
5. Before going to cardiac catheterization laboratory, anaesthetic cream will be applied to the dorsums of patient if indicated by Anaesthetist to relief pain during intravenous access later in theater.
6. The child will then go to the cardiac catheterization laboratory with parents & nurses after all preparation have been done.

Care after Cardiac Catheterization

1. When the child come back from the cardiac catheterization laboratory, he/she will be assessed by nurses and doctors. Electrocardiogram (ECG) and oxygen level monitor will be connected until the condition is stable.

2. Some children may need oxygen after the procedure, especially for those with cyanotic congenital heart disease.
3. The child will be allowed to sip small amount of water 4 hours after the procedure if he/ she is fully awake. Normal diet will be resumed if no nausea or vomiting occurs.
4. The child will be required to bed rest for 8-12 hours to prevent bleeding from the wounds at groins.
5. Doctor will examine the child again on the next day. Chest X-ray, ECG and cardiac ultrasound may be repeated. If the wounds and other assessment findings are satisfactory, the child can go home.
6. Patient can resume normal daily activities after discharge, but vigorous exercise/ heavy lifting should be avoided.
7. Patient can bath as usual, but need to change the bandaid over wounds after bathing to keep the wound dry until wound healed.
8. If the wounds bleed, press on the wound immediately. If bleeding persists, please go to near-by A&E for management.
9. Bruising and pain over wounds will gradually reduce after few days.
10. If signs of infection occur, such as fever, wound discharge, redness, swelling, heat and pain over wounds, please contact cardiology ward nurses for management.