

## What are the potential risks/complications with this test?

CMR is very safe and well tolerated. Major side effects are very rare. Some patients may feel tingling sensations in the hands during the scan but this is harmless. During gadolinium injection, some patients may feel discomfort at the area of the injection, a brief headache or metallic taste, but these are minor and transient. Please inform the doctor or radiographer if you experience any discomfort. Some patients with severe kidney impairment may develop a potentially serious complication called nephrogenic systemic fibrosis after receiving gadolinium contrast. For this reason, gadolinium administration is avoided in patients with severe kidney failure unless the patient is on haemodialysis.

## When will I know the results?

Your doctor will inform you of the results usually at your next clinic appointment. However, you may be contacted earlier if there is a severe abnormality requiring urgent attention.

## Contact information

**Non-Invasive Cardiovascular Laboratory**  
Main Building 1, Level 1

**Opening Hours:** 8.30 am - 6.00 pm (Mon - Fri)  
8:30 am - 12:00 noon (Sat)  
(except on Public Holidays)

**For appointments, please contact**  
Tel: (65) 6772 2002  
Email: [appointment@nuh.com.sg](mailto:appointment@nuh.com.sg)

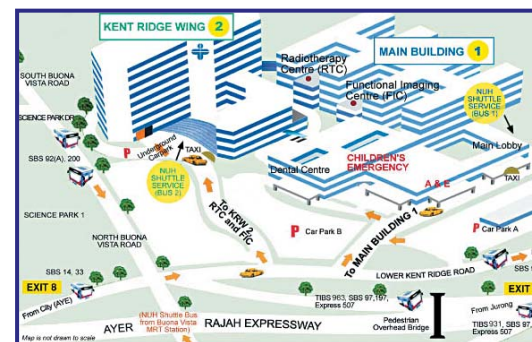
**For International Patients And Visitors**  
The International Patients Liaison Centre (IPLC) is a one-stop service centre to support all the medical needs of our foreign patients

Tel : (65) 6779 2777 (24-Hours Helpline)  
Fax : (65) 6777 8065  
Website : [www.nuh.com.sg/iplc.html](http://www.nuh.com.sg/iplc.html)



**National University Hospital**  
5 Lower Kent Ridge Road, Singapore 119074  
Tel: 6779 5555 Fax: 6779 5678 Website: [www.nuh.com.sg](http://www.nuh.com.sg)

## Location



## Free Shuttle Bus Service

Free Shuttle Bus Service from Dover MRT Station to NUH

**Operation hours :** 8.00 am – 8.30 pm (Mondays – Fridays)  
8.00 am – 2.00 pm (Saturdays)  
Not available on Sundays and Public Holidays

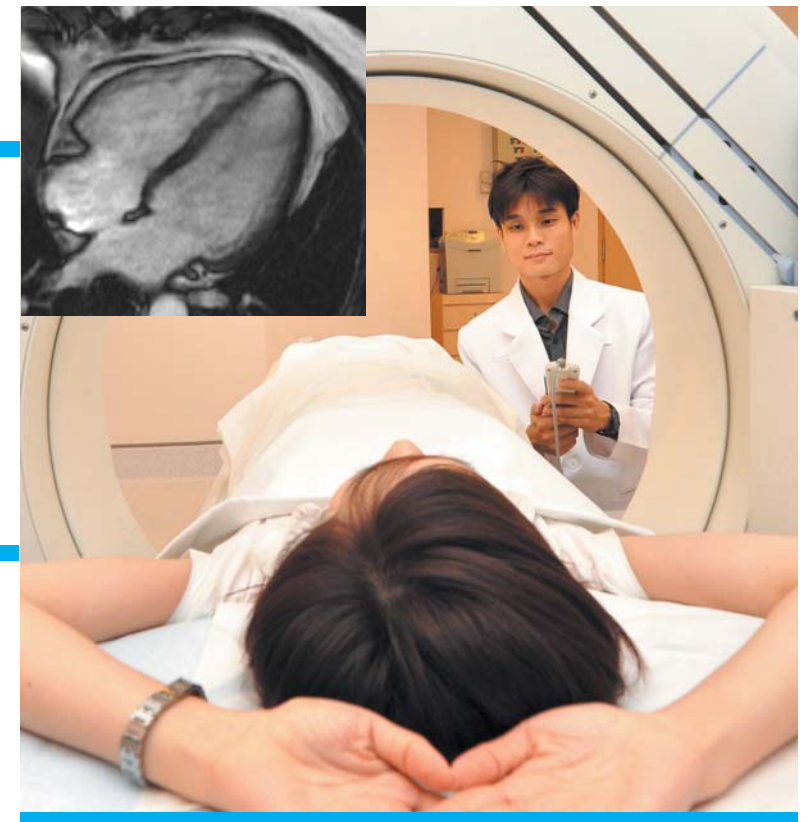
**Dover/NUH passenger pickup/ drop off point :** 1. Dover MRT Station (opposite Singapore Polytechnic)  
2. Main Building, Lobby Entrance (near roundabout)  
3. Kent Ridge Wing, Level 3, South Entrance

For more information on Shuttle Bus schedule, log on to [www.nuh.com.sg](http://www.nuh.com.sg)

Information in this brochure is given as a guide only and does not replace medical advice from your doctor. Please seek the advice of your doctor if you have any questions related to the surgery, your health or medical condition.

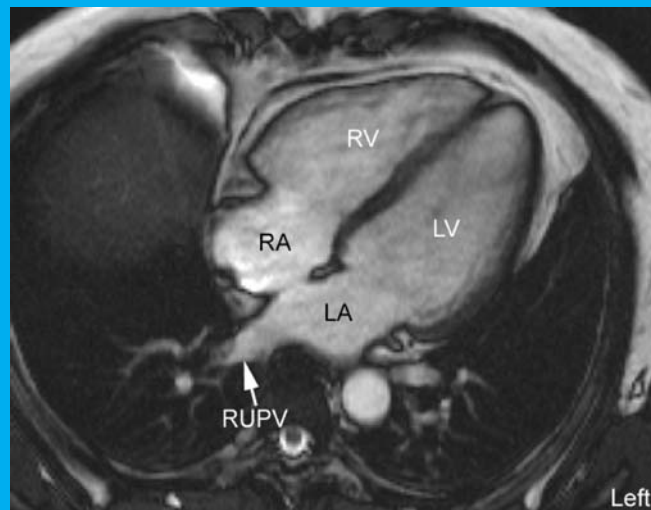
Information is correct at time of printing (Jan 2010) and subject to revision without notice.

## Cardiovascular Magnetic Resonance



## What is Cardiovascular Magnetic Resonance?

Cardiovascular magnetic resonance or CMR makes use of strong magnetic fields and radio waves to produce detailed images of the heart and blood vessels. Unlike x-ray or computed tomography (CT scan), CMR does not involve radiation. It is also non-invasive (that is, no equipment or instrument is inserted into the body to produce an image). Gadolinium, a contrast agent, may be injected intravenously during the scan to highlight certain abnormalities in the heart or blood vessels.



CMR image of the heart showing the 4 cardiac chambers, RA indicates right atrium; RV, right ventricle; LV, left ventricle; LA, left atrium; RUPV, right upper pulmonary vein.



Picture of an MRI scanner.

be asked to change into a gown and to remove all metallic objects and clothing with metallic material. You may, however, continue to wear gold rings. If you require gadolinium injection, a small plastic cannula will be inserted in your arm vein.

You will lie down comfortably on the scanner couch. ECG electrodes will be placed on your chest (this may require shaving of the chest in order to obtain a good ECG signal). A lightweight device is then placed over your chest to receive the image signals from your body. Finally, you will be given headphones or earplugs as the scanner makes vibrating noises during image acquisition. The couch will then move to the centre of the scanner and you will need to lie still for the duration of the scan (usually about 45 minutes to an hour). You will be in contact with the scanner operator at all times. During image acquisition, you are required to hold your breath, usually for about 8 to 12 seconds. You will be given clear breathing instructions throughout the scan.

## What should I do before the test?

It is important that you inform your doctor before the scan if you are pregnant or have the following:

- A heart pacemaker and/or defibrillator (ICD)
- Had brain surgery or vascular clips in the brain
- Implants or metal in your body
- Metal fragments in your eye
- Claustrophobia (fear of being in enclosed spaces)
- Kidney impairment or failure

You can eat and drink normally, and take your medications before the test, unless instructed otherwise. Do leave jewellery at home. You may bring a music CD to listen to during the scan. You must not bring any metallic object into the scanner room at any time.

## What is the purpose of this test?

Your doctor has decided that you require this test to obtain high-quality studies of your heart's structure and function. CMR is commonly used in the assessment of congenital heart diseases (such as hole-in-the-heart), coronary heart disease (such as assessment of myocardial viability after a heart attack), cardiomyopathies (diseases that primarily affect the heart muscles), diseases of the pericardium and conditions affecting the major blood vessels (such as the aorta or pulmonary arteries).

## What can I expect?

CMR is performed in the MRI Centre. Your doctor would have gone through a checklist with you to determine your suitability for this test before the scan. You will also be given an explanation about the procedure at the MRI Centre.

The magnetic resonance scanner is a large, cylindrical magnet situated in a specially constructed room. Before entering the scanner room, you will