



Dobutamine Stress Echocardiography (DSE)

What is Dobutamine Stress Echocardiography?

Echocardiography uses ultrasound waves (high-frequency sound waves) to visualise the heart and blood vessels. Ultrasound images of the moving heart can be obtained in various planes and displayed on a video monitor. Dobutamine Stress Echocardiography (DSE) is a non-exercise stress test that allows the Cardiologist to assess the condition of the heart when it is made to work harder during exertion.



Dobutamine, a cardiac medication, is infused through a vein in increasing doses to stimulate the heart to beat faster and harder.

Ultrasound images are then obtained to study the heart's function during the infusion of dobutamine. These are then compared to the images obtained at rest to determine if any part of the heart contracts abnormally, indicating that the blood supply to these abnormal areas may be inadequate.



What is the purpose of this test?



When the coronary arteries on the heart are narrowed, the heart muscles may still receive adequate blood supply in the resting state but during exertion when the heart is required to work harder, the blood flow may be insufficient to meet the increasing oxygen demands of the heart muscles.

This relative lack of blood supply (also known as Myocardial Ischaemia), causes cardiac chest pain (also known as Angina Pectoris), and may be a warning sign of an impending heart attack. DSE is a safe test for inducing Myocardial Ischaemia. DSE is also more accurate than an ordinary treadmill exercise Electrocardiogram (ECG) test for detecting underlying coronary artery narrowing.

How is the test conducted?

The supervising doctor will explain the procedure and you will be required to sign a consent form. Throughout the examination, which may take half an hour or more, you will be lying mostly on your left side, and may be asked to hold your breath for short periods of time.

Before the examination



Before the examination, a small needle is inserted into a vein in your hand for the infusion of dobutamine. Multiple ECG leads will be placed on your chest to monitor the heart rhythm; chest hair may have to be removed to facilitate this. Your blood pressure and ECG will be monitored throughout the test. A water-soluble gel is applied to your chest to improve contact for the ultrasound probe. A medical technologist will then place the probe on your chest to obtain the best possible ultrasound images before, during and after dobutamine infusion.

During the examination



During the examination, it is normal to feel your heart beating faster and harder, and/or feel a little short of breath. These are effects of dobutamine stimulation, and will resolve once the infusion is discontinued. Sometimes, dobutamine alone may not achieve a sufficient stress level (which is set at a certain target heart rate depending on your age). Another medication called atropine may then be injected to further increase the heart rate.

After the examination



After the examination, the medical technologist will help you clean up the gel, which is easily wiped or washed off. The ECG leads and intravenous needle will be removed. You need to rest for at least half an hour before leaving the hospital.

What should I do before the test?



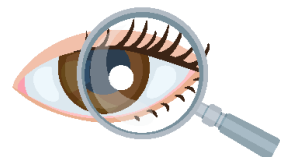
It is advisable to avoid food and drink for at least 2 hours before the test.

Come in light clothing to facilitate the examination.



Kindly check with your doctor if you are taking medications that slows down your heart rate, such as atenolol, bisoprolol, carvedilol, nebivolol, sotalol, ivabradine, diltiazem and verapamil. You may need to stop these medications 24 hours to 48 hours before the test.

Patients who have prostate problems or glaucoma (a condition causing eye pain due to excessively high pressure in the eye) should not receive atropine. Please inform the medical technologist or supervising doctor if you have these conditions.



What are the potential risks/complications with this test?



Ultrasound is extremely safe and has no side effects, even with repeated examinations. The minor adverse effects of dobutamine include palpitations, chest pain, shortness of breath, nausea, vomiting, dizziness and flushing. These are temporary and will disappear within minutes after the test is completed. Leakage of the drug at the infusion site may cause local pain and inflammation.

Atropine (another medication that may be used in this test) may cause blurring of vision, dry mouth, flushing, abdominal discomfort and retention of urine. As atropine stays longer in the body as compared to dobutamine, its symptoms may last up to a few hours after the test.

Close monitoring and supervision by the medical technologist and doctor during the test can reduce major complications. There have been cases of heart attacks and severe heart rhythm abnormalities being reported; however, various medications and treatment are available to address these issues should they unlikely occur. If you experience any chest pain or any other discomfort during the test, please inform the medical technologist or the supervising doctor.

When will I know the results?

A cardiology specialist will review the recorded video or computer images and ECG recordings of the DSE procedure. Your doctor will inform you of these results, usually at your next clinic visit. However, you may be contacted earlier if there is a severe abnormality requiring urgent attention.



Follow NUHCS:



National University Heart Centre, Singapore (NUHCS)



Scan for
more information

- NUHCS at National University Hospital (NUH), Kent Ridge - Main Operations
Main Building Zone F
Operating Hours: 8:00am - 5:30pm (Monday - Friday)
Closed on Weekends & Public Holidays
- NUHCS Heart Clinic @ Ng Teng Fong General Hospital (NTFGH)
Tower A - Specialist Outpatient Clinics Level 3, Clinic A34
Operating Hours: 8:00am - 5:30pm (Monday - Friday)
8:30am - 12:30pm (Saturday)
Closed on Sundays & Public Holidays
- NUHCS Heart Clinic @ Alexandra Hospital (AH)
Operating Hours: 8:30 am - 5:30 pm (Monday - Friday)
Closed on Weekends & Public Holidays
- NUHCS Heart Clinic @ Jurong Medical Centre (JMC)
Operating Hours: 8:30 am - 5:30 pm (Monday - Friday)
Closed on Weekends & Public Holidays

Hotline: (65) 6908 2222

Appointments: appointment@nuhs.edu.sg

General Enquiries: contactus@nuhs.edu.sg

www.nuhcs.com.sg

Take charge of your health and
access health information and
services across NUHS institutions.

Download the NUHS App now!



Scan to download



Every day, we impact lives by providing assistance
to financially disadvantaged patients.

Make a donation and help us continue the fight for every heartbeat!



Scan here to donate

The information in this brochure is meant for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please seek your doctor's advice before starting any treatment, or if you have any questions related to your health, physical fitness or medical condition.

© 2024, National University Hospital (Singapore) Pte. Ltd. All rights reserved. No part of this publication may be reproduced or shared without prior permission from National University Hospital (Singapore) Pte. Ltd.

Information is correct at time of printing (Jul 2024) and subject to revision without prior notice.