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## **ROUTINE CARDIAC INVESTIGATIONS**

This information booklet will talk you through the routine investigations that you may be required to have to form a diagnosis or monitor your condition. These include:

- ECGs
- Echocardiograms
- 24 hour monitors
- Exercise tolerance tests
- X-rays

## ECG (Electrocardiogram)

An ECG is a tracing of the electrical activity of the heart, which can be instrumental in identifying an abnormal heart rhythm or showing evidence of a prior heart attack. The test takes only a few minutes and involves sticking several small patches to the arms, legs and chest, which are connected to electrodes that record the electrical impulses generated by each heartbeat.

## 24 hour Holter monitor

A 24 hour tape is essentially an ECG that takes place over 24 hours. Tracing the electrical activity of the heart over a longer period of time than a standard ECG can help to diagnose symptoms such as palpitations, which do not occur all the time. As with a standard ECG, small patches are stuck to the chest, which are attached to wires leading to a portable recorder worn on a belt around the waist. Once the system has been set up you can go about all your daily activities as usual, but should avoid swimming, bathing and showering until the 24 hour period has come to an end. You will also be asked to keep a diary of any symptoms you experience during the time you are wearing the monitor, so that the doctor can pay special attention to the recordings made at those times and determine whether the symptoms are related to the heart.



Figure 1:

A patient wearing a 24 hour Holter monitor<sup>1</sup>

## 24 hour blood pressure monitor

A 24 hour monitor is programmed to take your blood pressure at regular intervals throughout the day and night, to allow your doctor to assess the reliability of readings obtained in their clinic and see how the pressures change throughout the day. The blood pressure cuff is fitted to your non-writing hand and will inflate every 20 to 30 minutes during the day, and every hour at night. The device will beep when it is about to inflate, and when it does so you should keep your arm straight until it deflates again. You will also be asked to keep a diary over the 24 hour period, to help the doctor make sense of any particularly high or low readings.

## Transthoracic echocardiogram

The standard echo (transthoracic echocardiogram) uses ultrasound to look at the structure and function of the heart. It takes about twenty minutes and is performed on an outpatient basis. It is painless and safe. A small handheld ultrasound probe is moved over the front of the chest wall to produce images of the beating heart on an adjacent monitor. The size and shape of the various heart chambers can be seen, together with the movement of the heart valves. A vast amount of information can be produced, which helps greatly with the diagnosis and management of a wide variety of heart conditions. For example, the effects of a heart attack on the heart muscle can be accurately assessed and many different causes of breathlessness can be identified.

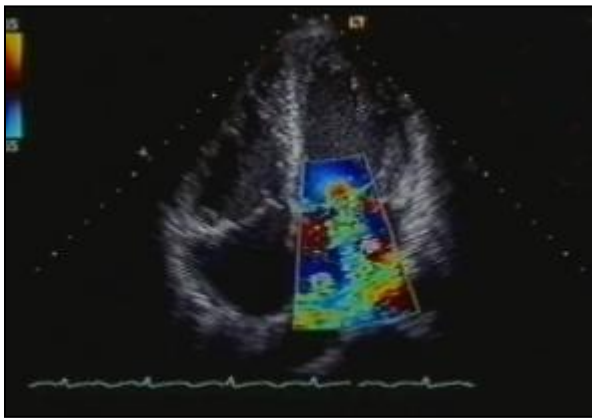


Figure 2:

An echocardiogram<sup>2</sup> showing a leak through the mitral valve (colour jet)

## Exercise tolerance test

An exercise tolerance test is an ECG carried out while the patient exercises on a treadmill. Chest pain or other symptoms during exercise can be indicative of angina, a specific type of pain caused by coronary heart disease. An exercise ECG can therefore help to diagnose coronary heart disease, and in patients known to have this condition it can give more detailed information about the severity of the illness and help doctors to establish a treatment regimen. The test usually takes about half an hour, beginning at a very easy rate and gradually made harder by increasing the slope of the treadmill. Your ECG reading will be monitored constantly by a doctor and a technician, and readings will continue to be taken in the recovery period after exercising. The test can be stopped at any time if you develop any chest pain, breathlessness or fatigue. You should make sure that you are wearing comfortable clothing and shoes suitable for exercise. There are facilities available to shower afterwards, if you so wish.

## Chest X-rays

A chest X-ray makes an image of the heart, lungs, airways, main blood vessels and bones of the chest and spine using a small amount of ionising radiation. It can be used to identify the cause for chest pain, persistent cough or breathlessness. Chest X-rays do not require any preparation, but you will need to remove anything metallic (e.g. jewellery, glasses, a belt) that may affect the image. You will be asked to stand against the image plate and will be asked to hold your breath for a few seconds while the image is taken. The whole process takes approximately fifteen minutes.

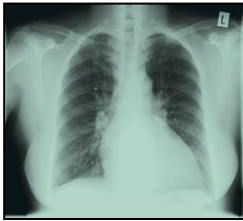


Figure 3:

A normal chest X-ray<sup>3</sup>

### Where do these tests take place?

ECG	}	110 Harley Street
24 hour Holter monitor fitting		
24 hour blood pressure monitor fitting		
Echocardiogram		
Exercise tolerance test		88 Harley Street
Chest X-ray		81 Harley Street

### References

<sup>1</sup> [www.diagnosticsuk.co.uk](http://www.diagnosticsuk.co.uk)

<sup>2</sup> [www.drholdright.co.uk](http://www.drholdright.co.uk)

<sup>3</sup> [www.student.bmj.com](http://www.student.bmj.com)